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ANNALS

OF THE

DUDLEY OBSERVATORY.

VOL. II. √

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By order.

METEOROLOGICAL OBSERVATIONS

Made at the Dudley Observatory, during a period of Nine Years, from 1862 to 1871. Including Hourly Automatic Printed Records of the Barometer for a Continuous Period of Five Years.

G. W. HOUGH, A. M.,
DIRECTOR OF THE DUDLEY OBSERVATORY.

THOMAS E. McCLURE, } *Assistants.*
HENRY L. FOREMAN, }

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INTRODUCTION.

DESCRIPTION OF THE AUTOMATIC REGISTERING AND PRINTING BAROMETER.

THE science of meteorology is as yet in its infancy. Universally interesting as its phenomena have ever been, and powerfully affecting the most important relations of society, it is but recently that the subject has engaged the systematic and combined effort requisite for its development, since its laws are still regarded as the most recondite problem in physics.

The chief obstacle, hitherto, has been in the imperfection of the methods of observation. The results, in order to be of value as data from which to construct a science, should present a *continuous* record of the phenomena during a considerable period of time, and taken at as many different stations as possible. By the ordinary method of personal observation, this is well nigh impracticable. It would demand at every station the services of several observers, at great expense; and their results could only, at best, be more or less of an approach to what is desired. To obtain this, the only alternative is to substitute some mechanical means for the labor of personal observation; in short, to make the instrument record its own changes. If this can be done in a single instance, it can be done continuously.

The only method by which this has been hitherto attempted with success has been by the application of photography.

This, though a very considerable advance, and probably all that could be desired in respect of continuity and accuracy of the record, is liable perhaps to the objection that it is too complicated a process for general use. If we consider the skill requisite in the preparation of the paper, the delicacy of manipulation involved by the apparatus, and the labor of interpreting the results, as compared with the average capacity and means of the great number of observers desired and likely to volunteer or be employed for such a purpose, it would seem that a simpler process is both desirable and necessary. This it has been my intention to furnish, and with what success remains for time and experience to determine.

The problem to be solved was, to cause any meteorological instrument, by means of suitable mechanism, simply and effectually to record its own changes. The instrument selected for experiment was the barometer. When any delicate instrument is made to record its own changes by mechanical means, the chief difficulty is that of getting whether the motion be uniform or variable, forward or reverse.

The feasibility of this plan was discussed with my friend Mr. Thomas Simons as early as the year 1862, and some steps were then taken to apply it to the thermometer. I may here express my acknowledgments to Mr. Simons for valuable suggestions in the construction of the present machine. Various plans were considered for effecting the electrical contact with the fluctuating medium which is the basis of this method. It was at first proposed to do this at the surface of the mercury in a siphon barometer, by means of a platinum wire which should be carried continually toward the mercury surface by suitable mechanism, and on touching the surface, a galvanic current would be formed which should operate by an electro-magnet on the mechanism so as to reverse the motion of the wire and break the circuit. This would be immediately restored by the normal movement of the mechanism, and thus the point of contact would be kept oscillating *at* the surface continually. The consumption of battery power by this plan would have been considerable, and it was thought the oxydization of the mercury by the electric circuit would in time be appreciable. It was therefore concluded to make the connection outside of the barometer tube, by means of a float resting upon the mercury column. By this plan there is no demand of action from the battery until some change takes place in the barometer, and a considerable saving of battery elements is effected.

Attention was then given to determining the degree of delicacy with which changes of the mercury surface could be represented by this process. It was found by experiment that a motion of less than .0005 of an inch was readily shown; a quantity far within the limits of reading of a first class standard barometer.

The next step was to devise the proper mechanism for repeating the motion thus transferred, and recording it in some legible form. A finely cut screw was considered as best adapted to measure such minute intervals of space. To this screw a forward or reverse motion was given by a double system of clock work, each operated by an electro-magnet in connection with the float, and raising or lowering the screw by intervals corresponding with the changes indicated in the mercury column.

In respect to the permanent record of results, it was decided not only to attempt the production of a linear diagram or curve of atmospheric pressure, as an interesting method of presenting the recorded changes to the eye, but to avoid the tedium and uncertainty of measuring up such results, by producing at the same time a printed record of such variation, to any extent deemed advisable.

Having thus endeavored to give some conception of the design and principal features of this method, I will proceed to explain more fully the details of its execution as at present arranged.

In order to make any self-recording machine of this kind practicable, we need to attend to two points: First, to reduce the consumption of electricity to the smallest possible amount consistent with certainty in the results; and secondly, to secure the greatest amount of useful work with the minimum of labor. We at once decided to adopt the "make" circuit; for so long as there is no motion, there will be no consumption of battery elements. The battery which we have adopted for recording transits is essentially that of Daniell; sulphate of copper being the exciting agent. A battery of this kind will maintain sufficient power for chronographic records for two or three months, without being cleaned; it being only necessary to add a little sulphate of copper and water from time to time. The only work demanded of the electro-magnets is the unlocking of the mechanism, which is driven by weight power.

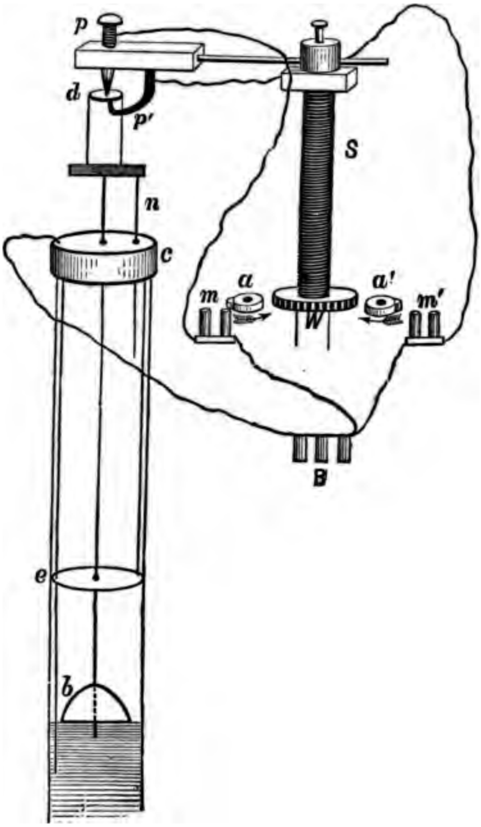


FIG. 1.

In Fig. 1, we have a sectional view of the lower leg of the siphon, showing the principle on which this method is based. It may be necessary to remark, however, that the electro-magnets and battery do not occupy these positions in reality, but are placed here for convenience of illustration.

Let B = battery.

m, *m'* = electro-magnets.

a, *a'* = wheels having one tooth, and revolving in the direction of the arrows.

S=screw supporting the arm, carrying two wires, *p* and *p′* tipped with platinum.

d=platinum disk carried by the float *b*. The two wires, *p*, *p′*, are respectively above and below the center of the disk *d*.

W=wheel with forty teeth, in which is inserted the screw S.

n=a small steel wire passing through the brass cap *c*, to prevent the disk *d* from revolving.

e=an ivory disk inserted in the tube, to prevent the float *b* from rubbing against the sides of the tube.

Now suppose the mercury should rise in the short leg of the siphon, as represented in the figure. The float *b* will be raised, and cause the platinum disk *d* to come in contact with the point of the platinum wire *p*, closing the circuit through the electro-magnet *m;* the armature of which being attracted, unlocks the clock work, and allows the wheel *a* to make a complete revolution. By this means the wheel W is advanced one tooth, which raises the screw S the $\frac{1}{2000}$ of an inch, and consequently carries the point *p* that distance away from the disk *d*.

As long as the mercury rises, the magnet *m* will be operated, and the platinum point *p* will be kept the $\frac{1}{2000}$ of an inch above the disk *d*.

If, on the contrary, the mercury falls in the siphon, the under side of the platinum disk *d* will be brought in contact with the point of the wire *p′*, thereby closing the circuit though the magnet *m′;* the armature of which allows the one tooth wheel *a′* to make a complete revolution, thereby causing the screw S to be depressed the $\frac{1}{2000}$ of an inch, carrying, of course, the platinum point *p′* with it.

It will now be readily seen how the platinum disk *d*, carried by the float *b*, may always be maintained midway between the two points *p* and *p′*, and distant a little less than the $\frac{1}{2000}$ of an inch from each.

The barometer is of the siphon form; the inside diameter of the portions near the surface of the mercury is nearly one inch. The upper and lower portions were made from the same glass tube, the two being connected by a tube of smaller diameter. The experiments and observations, so far, indicate that there is no appreciable difference in the size of the two legs of the siphon.

The float *b* is of ivory; the form a paraboloid of revolution. The under side of this float is very slightly concave. The diameter is one-tenth of an inch less than the inside diameter of the tube, so that there is no friction between the sides of the float and glass. The platinum disk *d* is supported by a steel wire passing through a brass cap *c* fitted on the top of the tube, and an ivory disk *e* inserted at a distance of two and a half inches above the float *b*. The ivory disk is connected with the brass cap by means of two wires, so that it can readily be removed. A light steel wire *n* passes through a hole in the cap, for the purpose of preventing the disk *d* from revolving. This is made sufficiently free to prevent any friction.

The disk *d* is made of brass, one-half an inch in diameter, and is covered on both sides with platinum plates.

The wire *p* is attached to a fine screw, for adjusting the distance of the points *p* and *p'* from the surface of the disk *d*.

These wires, *p* and *p'*, are of course insulated, by being attached to an ivory block, as shown in the figure. The wires from these points are led to the top of the screw S, where they are fastened to an ivory block, after which they are connected with the electro-magnets *m*, *m'*.

A platinum wire is inserted in the side of the barometer tube, and passes down in the mercury on the side of the float *b*. This wire is also connected with one pole of the battery.

The principle employed for giving motion to the screw S, which follows the fluctuations of the mercurial column, has been taken from the stop work long used on clocks. The barrel of a clock on which the cord is wound usually has a one-tooth wheel on its axis; and at every revolution of the barrel, a cog wheel is made to advance one tooth. This cog wheel is, of course, always detached from the barrel tooth wheel, except when in the act of advancing the tooth. In Fig. 2, we have a vertical view of a portion of the mechanism, showing the method of communicating motion to the screw S. The one-tooth wheels, *a*, *a'*, when at rest, occupy the positions as shown in the drawing; and being detached from the cog wheel W, it is free to move in either direction. The screw S, which is shown in Fig. 1, is raised or depressed by the

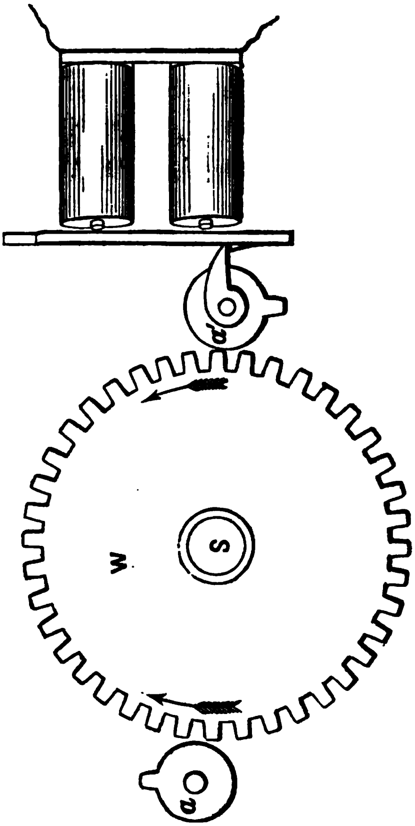


FIG. 2.

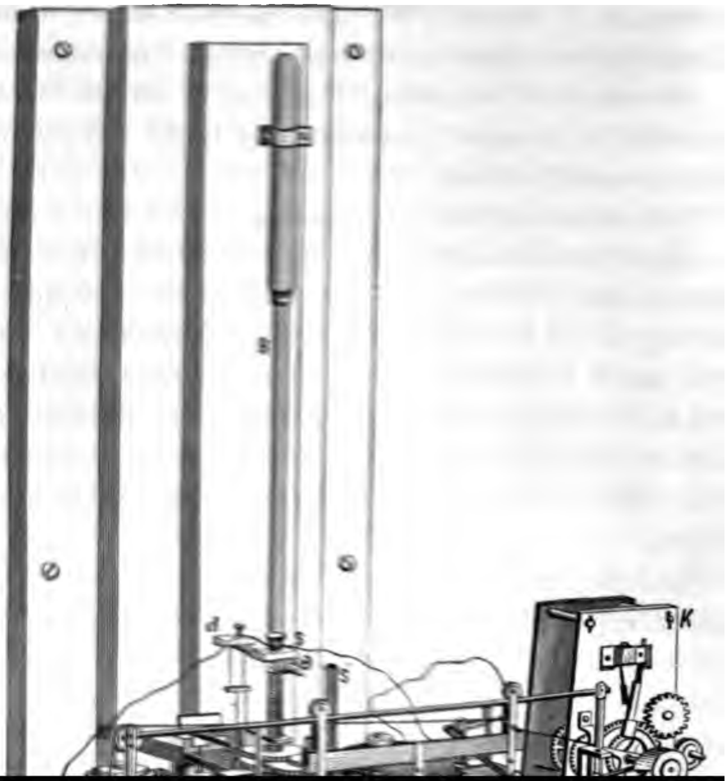
revolution of the wheel W. The one-tooth wheels *a* and *a′*, moving in the direction of the arrows, give opposite motions to the wheel W; the office of *a* being to elevate the screw, and of *a′* to depress it, corresponding to the fall and rise of the mercurial column.

The mechanism for giving motion to the wheels *a* and *a′* is ordinary clock work, each being directly acted on by the barrel wheel, which is driven by a weight. One revolution of the barrel corresponds to twelve of the wheels *a* and *a′*. The axles to which are attached *a*, *a′*, carry another wheel having a single half-tooth, as shown in the drawing, Fig. 2, which, resting against a little projection on the armature of the magnet, holds the wheel in the position as shown in the figure.

In order that the wheels *a* and *a′* may not revolve with too great rapidity, a train of clock work is connected, consisting of two additional axles, a fan being attached to the latter, by means of which the motion can be regulated to any desirable velocity. Three axles would undoubtedly be sufficient: the barrel axle, the axles *a*, *a′*, and an additional one for the fan. We adopted the present form, because we happened to have a couple of clock movements at hand, and used them just as they were.

In order to prevent the cogs of the wheels *a*, *a′*, from coming to the circumference of W at the same time, during rapid oscillations of the barometrical column, two circuit "breakers" were connected; so that, at every revolution, the circuit is interrupted, and neither wheel can revolve until they both are at rest.

Fig. 3, is a perspective view of the apparatus as it is when in operation. The frame work for supporting the barometer tube and other mechanism is of black walnut, two inches thick, which is firmly fastened to east wall of the west transit


B
d
S
S
K

room. This wall is built of brick, and is two feet thick, so that the whole apparatus occupies a very firm position.

Having given a general idea of the mechanism for causing the screw S to follow the motions of the barometrical column, we will show how the curve of pressure is recorded, as well as the printed results.

The wheel W, Fig. 2, which receives the impulses, has forty teeth; and the screw S, having fifty threads to the inch, one tooth of the wheel W corresponds to the $\frac{1}{2000}$ of an inch change in the barometrical column, or $\frac{1}{1000}$ of an inch change of pressure. To the wheel W is attached another of nearly the same diameter, having eighty teeth; this wheel is geared into one of forty teeth carrying an eighty-tooth wheel on the same axle. This second eighty-tooth wheel is geared into a fifty-tooth wheel, which operates the screw S′, Fig. 3, of twenty-six threads to an inch. To this screw is attached an arm, carrying a pencil which traces the curve of pressure on the revolving cylinder *o*.

From this arrangement, the curve is magnified a little more than three times the barometrical pressure. It would have been an easy matter to adapt the second screw and cog wheel, so that the curve would be exactly an integer scale—say one, two, three or four times; but as our printed results may be obtained much more accurately, and as often as is necessary, it was not thought of sufficient importance to construct a screw especially for this purpose.

We will now explain the mechanism for printing the results.

A sectional view of the combination is shown in Fig. 4, where X and Y are two vertical steel axles. The final result expressed in thousandths of an inch, is found on the axle X, where *u* is the units wheel, *t* tens, and *h* the hundreds; or where the thousandth of an inch is the unit of measure, *u* will represent thousandths, *t* hundredths, and *h* tenths of an inch.

The wheel u_0 may be supposed to have ten teeth, and is connected with *u*, so that they move together. If motion be given to u_0, so that it move one tooth at each impulse, each tooth will represent the $\frac{1}{1000}$ of an inch; and ten impulses, or a whole revolution, will represent the $\frac{1}{100}$ of an inch. The wheel *u* has one tooth, and the wheel *a* on the axle Y has ten teeth. Now when *u* has made a complete revolution, it will have advanced *a* one tooth or one-tenth of a revolution; consequently the wheel *a* will always express the hundredths.

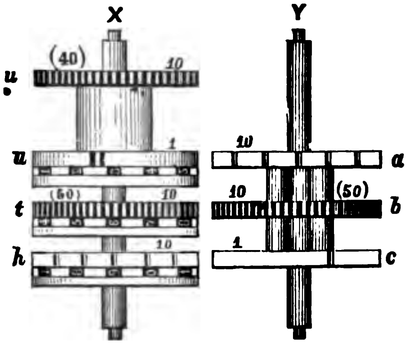


FIG. 4.

In order to transfer the motion of *a* to the axle X, we fasten to *a* the wheel *b*, having ten teeth; and by gearing this in the wheel *t*, having ten teeth also, we transfer the motion of *a* to *t;* hence we have the thousandths and hundredths expressed on the wheels *u* and *t*.

But let us go a step further, and see how we get our tenths, The wheels *a*, *b*, we have shown, indicate the hundredths; we therefore attach to them another wheel, *c*, having one tooth. Let the wheel *h*, of ten teeth, be placed opposite. Now, when the axle X, carrying the wheels *a*, *b*, *c*, has made one complete revolution corresponding to one-tenth, the wheel *h* will have advanced one tooth; consequently the tenths will be represented on the wheel *h*.

It is of course understood that the wheels *u*, *t*, *h*, are separate, and free to move about the axis X. By repeating this combination, we can employ any number of figures we choose.

The wheels *u*, *h*, *a* and *c*, are made after the plan employed in the stop work in a chronometer. In Fig. 5, *a′* and *c′* indicate this form of gearing. It is seen that the teeth of one wheel are cut in the arc of a circle, with the radius equal to that of the wheel into which it gears. This arrangement prevents any motion, except it be communicated by the units wheel. The whole mechanism is therefore locked together, and it is just as impossible for it to get out of order as it is for ordinary clock gearing.

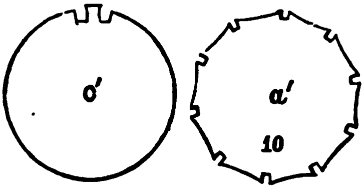


FIG. 5.

The chief merit of this combination is, that it will carry for ten either forward or backward. This principle is necessary in any meteorological printing instrument. We need no extra apparatus for bringing the type in line, since if the mechanism is well constructed, it will always arrange itself. When once set it will remain so, for no change can be made without ungearing the machine.

We use ordinary type which are set in separate disks, being afterward screwed fast to *u*, *t* and *h*. In case a type is accidentally damaged or broken, another can be inserted in a few minutes. Steel type would undoubtedly be the best, as being more durable and less liable to damage. We should add, that the wheels *t* and *b* have each fifty teeth, five teeth being moved at one impulse.

The printed results are received on the strip of paper *j*, moved by the clock work *k*, Fig. 3, which at the same time regulates the revolving cylinder *o*, on which is traced the curve of pressure. This same clock raises a small hammer *h*, by means of a screw or spiral on the minute wheel arbor, which at every revolution is allowed to strike the small cushion *i*, by that means leaving the impression of the type on the paper strip. In order to secure greater distinctness in the printed results, without employing much power to make the impression, a strip of duplicating impression paper is inserted between the type and ordinary sheet of white paper.

We are not limited in our printing to hourly records, but they can be obtained as often as it is desirable, by supplying the additional power required to raise the hammer. The clock for moving the printed slip and cylinder is an ordinary half-second pendulum, which we happened to have at hand. It was not thought necessary to print the integer number of inches, nor the time; for the paper slip has the time already printed on the side, so that when the record of the day is completed, it is only necessary to add the date and integer inches.

The best form and arrangement of the float can only be determined by experiment. In our original barometer tube, which was 0.4 inches diameter, we inserted an ivory float which nearly fitted the tube. The upper end of the wire for supporting the platinum disk *d*, was connected with the arm carrying the platinum points. This form worked very well, as the following results will show. The instrument was allowed to run from April 24th to 30th, without being disturbed. It was set with the standard barometer (Fastré), at 4 P. M., April 24th, 1865.

DATE.	Hour.	Temperature. Centigrade.	Standard barometer reduced to 0 deg. cent.	Printing barometer reduced to 0 deg. cent.	Difference.
			in.	*in.*	*in.*
April 24..	4	8.5°	29.947	29.947	+0.000
April 25..	22	10.0	29.934	29.929	+0.005
April 26..	2½	13.0	29.789	29.784	+0.005
April 27..	21½	13.0	29.862	29.859	+0.003
April 30..	0	12.0	29.755	29.750	+0.005

During this period the barometer reached a maximum of 30.114, and a minimum of 29.435.

A comparison of these results show that even with inferior and comparatively rough apparatus, the individual results are equal to a reading obtained from the best standard barometer. For when we consider that the error of the temperature constant, for the new apparatus, may in this case, even for a difference of 5°, amount to 0.005 in., it would show that the errors introduced by the mechanism are almost inappreciable. At this time the registering barometer was not compensated for temperature; the reductions being made from a short table computed for this purpose.

Numerous experiments have been made to test the stability of the float and magnetic connections. It will hardly be necessary to give the results in detail. In case there was no friction of any kind, the float ought always to assume the same position for the same height of the mercurial column. The following is the test we have applied. The electrical contact being broken by the key *l*, fig. 3, the screw S was turned so as to force the float into the mercury 0.010 of an inch; after which, the current was established, and the float was allowed to take up a position of equilibrium. The same thing was repeated, by turning the screw in the opposite direction and lifting up the float. From many trials it was found that there was rarely a difference of 0.002 of an inch, and usually less than 0.001 of an inch, from the original position. The same test was applied for larger disturbances, viz., 0.020 or 0.030 inches, with nearly similar results. This is not a fair test, however, since these conditions are never realized in practice. From all our experiments so far, we see no reason why the machine should change its zero any appreciable amount, during a whole year or greater length of time.

The daily comparison of the printed records, with the readings obtained from the standard barometer (Fastré), gives for the mean error of a single result ±0.0035 in. This determination is based on the hypothesis, that the error of reading the standard barometer, is zero ; which we know is not the case.

The following is a *fac simile* copy of the record as printed by the machine. The numbers on the left hand are the hours from noon of the 11th to noon of the 12th. The remaining figures are the barometrical heights expressed in thousandths of inches.

DUDLEY OBSERVATORY, *May* 11*th*, 1865.

TIME.	BAROMETER.		
	29 IN.		
HOURS.			
0	7	0	4
1	6	9	6
2	7	0	9
3	6	8	8
4	6	9	2
5	6	8	1
6	6	9	0
7	6	8	9
8	6	8	0
9	6	6	2
10	6	5	8
11	6	7	0
12	7	3	6
13	7	0	0
14	7	0	1
15	7	1	8
16	7	7	6
17	7	8	3
18	7	8	4
19	7	8	9
20	7	9	0
21	7	8	3
22	7	8	5
23	8	0	1
0	8	0	4

The foregoing description applies to the original barometer. The instruments subsequently built were very much modified, so far as the mechanism is concerned. The machine now in constant use at the Dudley Observatory, records the following:

1st. The height of the barometer, printed hourly, to thousandths of inches.

2d. The curve of pressure, magnified two and one-half times, on a scale of one inch for 24 hours.

[illegible] magnified two and one-half [illegible].

4th. [illegible] formation of the [illegible] of measure being [illegible]

5th. A record of [illegible] for each separate [illegible].

The paper for the printed record, long curve, and total disturbance, needs to be changed once in two days. The sheet for the short curve is changed twice each month. The mechanism needs winding once every two days.

With this apparatus, the following records are secured, with an average expenditure of labor amounting to five minutes each day:

(1) An hourly printed record of the barometric height.

(2) The curve of pressure.

(3) The daily and hourly fluctuation or disturbance.

(4) [illegible] is read and compared, whenever [illegible] changed.

make the thermometer bulb of the same size as the barometrical column.

From many experiments made, to determine the effect of temperature, and a full discussion of the results, we decided to employ a siphon proper, which should have the elements of compensation within itself, thereby avoiding the uncertain temperature corrections.

The idea of a compensating siphon was first suggested to me by Dr. James Lewis, who proposed to secure the necessary conditions by making the upper and lower legs in the form of a conical frustrum.

The difficulty in the mechanical construction of such a tube, especially if made of glass, led us to the further investigation of the subject.

The conclusion to which we arrived was, that in a siphon barometer, constructed of any material, the compensation for temperature could be secured by using a certain *volume* of mercury.

The whole theory of a siphon compensation depends on this fundamental proposition, viz.: If the atmosphere will support 30 inches of mercury at 0° Centigrade, at 100° C. it will support $30+30e=30.540$ inches; e being equal to 0.018, the expansion in volume of mercury for 100° C. If now, in a siphon barometer, the increased length of the whole column, when the temperature is raised from 0° to 100° C., is equal to $30e=0.540$ inches, the surface of the mercury in the short leg of the siphon will remain at the same zero of height for all temperatures, at 30 inches of pressure. Put $e'=0.016$ the expansion of the mercurial column in a glass tube for 100 °C.

Let $2m$=length of mercury in the equal legs of the siphon in which the diameter is unity.

l=length of intermediate column.

d=diameter of intermediate column.

h=height for which the compensation is to be computed.

Then we have the following general formula:

$$(2m+ld^2)e'=he.$$

It is readily demonstrated that all siphons of the same diameter, in the equal legs, will require the same volume of mercury for compensation.

If the siphon be of uniform diameter throughout, it will require 33.7 inches of mercury to compensate at 30 inches of pressure.

A tube of this form will hardly give a sufficient length of mercury in the short leg. In order to attain the necessary length, we connect the two equal legs with a tube of smaller diameter.

This form is of easy construction, either for glass or steel, and it gives us a tube which can be compensated by direct experiment.

The following tables have been calculated, to aid in the construction of a glass compensated siphon:

TABLE I.

d.	*m.*	
0.70	8.5	inches.
0.75	7.2	"
0.80	6.0	"
0.85	4.6	"
0.90	3.1	"
0.95	1.5	"
1.00	0.0	"

TABLE II.

D.		W.	
0.2	inches	0.62	lbs. Troy.
0.3	"	1.41	"
0.4	"	2.50	"
0.5	"	3.91	"
0.6	"	5.61	"
0.7	"	7.66	"
0.8	"	10.00	"
0.9	"	12.67	"
1.0	"	15.64	"

In computing these tables, $h=30$ inches; $l=34$ inches.

D=diameter of the equal legs; W=weight of mercury necessary to compensate.

Table I shows the length of the column of mercury in the equal legs, for different values of *d;* the diameter of the equal legs of the siphon being regarded as unity.

Table II shows the volume or weight of mercury necessary to compensate a siphon, without regard to its shape, provided the upper and lower surfaces of the column are of equal diameter.

If a steel siphon is employed, it will be as well to use a tube of equal diameter throughout. At 30 inches of pressure, a steel tube will require about 36 inches of mercury.

In the construction of a glass siphon, it will be best to adopt $d=0.80$. After the tube is filled to the theoretical height, the whole apparatus can be subjected to different degrees of temperature, in the same manner as the compensation of a pendulum. By reading the standard barometer every quarter hour, during the progress of the experiment, the exact error of compensation can be determined; and by adding or substracting mercury, the compensation can be perfected. In a siphon that is compensated for 30 inches of pressure, the correction for different degrees of pressure and temperature will be very small; since for 1 inch and 100° C., the correction will only amount to 0.018 inches. The largest correction required will rarely amount to 0.004 inches.

The error of reading a first class standard barometer is considerable; chiefly owing to the difficulty in bringing the surface of the mercury in the cistern to the zero of height. We speak now of that class of barometers where the surface of the mercury in the cistern is brought in contact with the point of an ivory pin. The uncertainty of making an exact contact, may effect the readings to the extent of 0.008 of an inch. The mean error for reading our standard barometer, *Fastré*, tube of one-half inch diameter, and cistern of two inches diameter, is nearly 0.004 of an inch. We also find that there is a personal equation existing between the readings of two observers, mostly due to this cause. This personality between my assistant, Mr. McClure, and myself, amounts in the maximum to 0.005 of an inch. It is also found that readings made by the light of a lamp are not the same as the daylight readings; the difference in some cases amounting to 0.010 of an inch.

It is proposed to obviate a large source of these difficulties by using electrical contact to bring the surface of the mercury in the cistern to the zero. This can readily be done at fixed stations, where meteorological observations are carried on with but little trouble. In place of the ivory pin usually employed, we would substitute a double platinum pin; one point of which should pass through a small metal disk resting on the surface of the mercury in the cistern, and the other placed above the surface of the disk. If these two pins are insulated, and connected with the poles of a galvanic battery, when the mercury in the cistern is raised, bringing the metal disk in contact with the platinum point, the current will be established; and an audible signal can be given by means of an electro-magnet. By this means we eliminate all errors and personal equation, in determining the zero of the cistern; and, consequently, the remaining error of reading will be confined to the bisection of the upper surface. The actual test of the magnetic connection, as applied to our barometer, gave the following results. We would remark, however, that no metal disk was employed, but one platinum wire was plunged directly into the mercury, and the other was made of the same length as the ivory pin, and only touched the mercury when the contact was made for bringing the mercury in the cistern to zero.

A large number of readings made by Mr. McClure and myself, showed that by this method the personal equation was entirely eliminated; the mean of five or ten consecutive readings not differing by an appreciable quantity. The mean error for a single reading amounted to 0.001 of an inch, and the maximum error to 0.002 of an inch; showing conclusively that the chief source of error in reading a barometer, lies in the adjustment of the surface of the mercury in the cistern to the zero.

THE STANDARD BAROMETER.

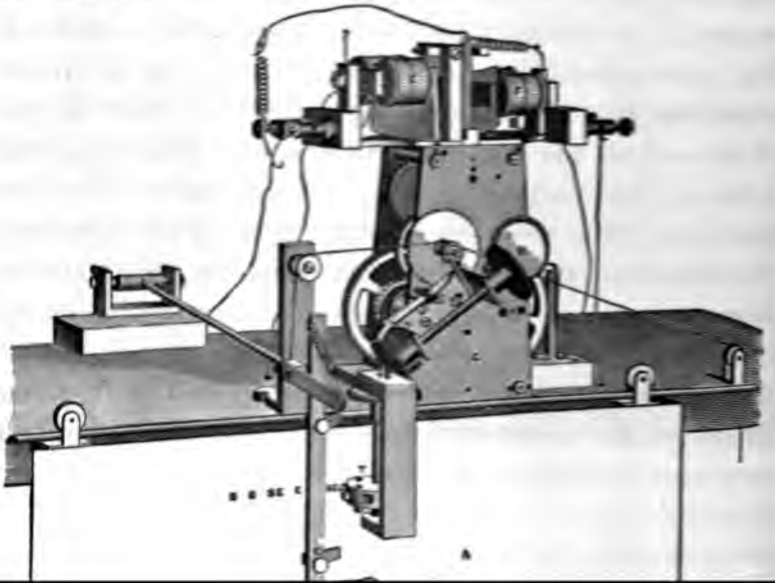
The standard barometer has a tube one-half inch in diameter. It was built by *Fastré*, Paris. The scale is of brass, and extends the whole length of the tube. At 30 inches of height the vacuum is about 10 inches in length.

The zero of the cistern is determined by bringing the surface of the mercury in contact with the point of an ivory pin. The scale reads millimetres and hundredths.

The attached thermometer is fixed against the tube near the middle, and has a bulb of the same size as the barometer tube.

This instrument is mounted in the west transit room, against the brick wall of the building, with the cistern two feet above the floor of the room.

DESCRIPTION OF THE ANEMOGRAPH, FOR REGISTERING CONTINUOUSLY THE VELOCITY, AND PRINTING HOURLY THE DIRECTION OF THE WIND.



For indicating the velocity, revolving hemispherical cups are employed. By attaching a magnetic connection to the shaft, making one revolution for one-tenth of a mile of wind, an electro-magnet is operated once for every complete revolution of the shaft. By causing this electro-magnet F, to unlock the clock work mechanism, shown in Fig. 1, the pencil B is gradually elevated over the paper, advancing by steps, indicating one-tenth of a mile of wind. At the end of the hour, the pencil is detached, and drops down to its original position. By this means, the total amount of wind for each hour is recorded on the sheet; one-quarter of an inch being equivalent to a velocity of ten miles.

The direction is printed hourly, by mechanism, in electrical connection with the vane. Heretofore, in recording the direction, by means of electrical connections, as many wires and electro-magnets have been used as the number of points recorded. By our method, but one wire and two electro-magnets are necessary for recording or printing any number of points. To the shaft of the vane is attached a wooden drum, inlaid with strips of brass, of which Fig. 2 is the development. At the end of every hour, an electro-magnet unlocks a clock work, which causes a platinum wire to traverse the drum vertically. This wire passing over the strips of brass, shown in Fig. 2, makes and breaks the circuit.

For north wind, the circuit is interrupted eight times; for south wind, four times, and for northeast once. The circuit, on being interrupted, operates the electro-magnets F, allowing the clock work to advance the type wheel T, to the position corresponding to the direction of the wind, after which the printing hammer falls, leaving the impression of the type on the paper. After the printing is accomplished, the type wheel is advanced by means of a circuit through the time clock, so that it makes a complete revolution, stopping at the zero, in readiness for the next record.

The method of operating the two electro-magnets on the same circuit, separately, without interference, is too complicated for explanation without complete diagrams. It may, however, be stated that the order of operation is as follows. The time clock, used for running the paper and elevating the printing hammer, closes the circuit through the electro-magnet in connection with the vane. Immediately on the unlocking of the mechanism for moving the platinum wire near the drum, attached to the vane, the circuit is broken, and again closed through the electro-magnet F, in readiness to receive the indication of the drum. The circuit is again opened, and remains so until after the printing hammer falls, when a short circuit i established through the time clock and magnet F, causin the type-wheel to advance to its zero. During the firs fifteen minutes after printing, the local circuit is maintaine through the time clock, so that if by any means the typ

DESCRIPTION OF A NEW METHOD FOR THE AUTOMATIC REGISTRATION OF METEOROLOGICAL PHENOMENA.

In the year 1865, I published a description of an automatic printing barometer, together with some remarks on the application of the method of registration to other meteorological instruments.

A few machines, constructed on this method, have been in use during the past five years. The apparatus at the Dudley Observatory has given a continuous series of results from November, 1865, to the present time. These observations are printed *in extenso* and fully discussed in the present volume. The accuracy and value of the results given by this method of registration, will be fully understood from an examination of the series of observations from 1865 to 1870. For my own use, the method is much to be preferred to the one now about to be described. The somewhat complicated mechanism, however, as well as its great cost, led me, during the early part of the present year, to attempt a more simple method which should give reliable results; one which would be likely to meet the wants of ordinary observers. We believe such a method has been devised, applicable alike to the registration of all meteorological phenomena; and it is presumed the simplicity of the mechanism will commend it to meteorologists generally.

The following diagram will serve to explain the fundamental principle of the method.

Fig. 1 shows the plan for registering the height of the barometer and thermometer on a single sheet, by the use of one set of mechanism.

Let D be a drum, six inches in diameter and seven inches in height, covered with a sheet of ruled paper. This drum is presumed to revolve at any convenient rate, say one inch per day. Let L be an iron or brass bar, 24 inches in length, mounted on an axis, passing through the point *c*. Let P be a steel pen, attached to the end of the lever, projecting over the center of the drum. Let P′ and P″ be platinum wires, attached to the lever at 3 inches on either side of the axis *c*. The wire P′ is over the shorter leg of a siphon barometer, and the wire P″ passes in the end of an open mercury thermometer.

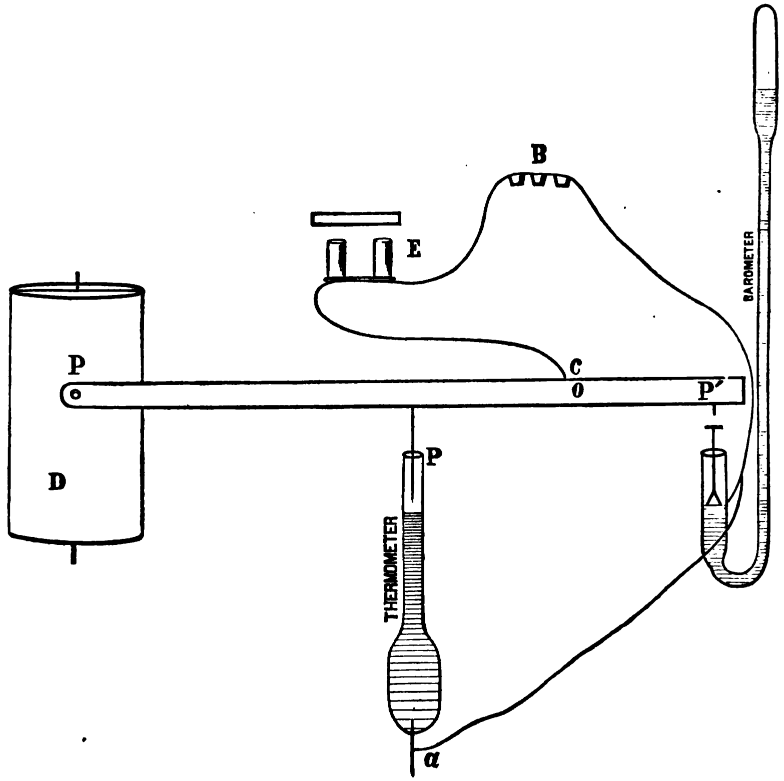


Fig. 1.

Now, if the lever L be elevated, at the end over the drum sheet, the wire P′ will touch the top of a float resting in the shorter leg of the siphon barometer. If, then, a battery B and electro-magnet E be arranged as in the diagram, when contact is made with the float, a current of electricity will pass through the circuit, and the electro-magnet E will be operated. If, then, when the circuit is completed, a blow be struck on the pen P, by means of the electro-magnet, or a hammer unlocked by it, the dot on the drum sheet will indicate the height of the barometer at that time. It is obvious that as often as the lever is elevated, a record will be made. For the barometer, an hourly record will be found to be sufficient.

If the lever L is rigid and firmly mounted, the mere measurement of height by means of electrical contact, can be carried to almost any degree of precision. It was found, from numerous experiments made some years since, that the magnet circuit is not completed for a distance of one ten-thousandth of an inch. Therefore, whatever error there may be in the results recorded by this method, it will be due to the barometer itself, the relative change of position between the barometer tube and drum sheet, due to moisture, temperature, etc. In practice, from records extending over a period of more than a year, it is found that the results are inside the errors of reading from the drum sheet. It is found impracticable to read from the sheets, which have a scale two and a half times the change of pressure, nearer than the one-hundredth of an inch.

A long experience has led us to conclude, that this degree of precision is sufficient for the investigation of barometric changes, and is but little outside the limit of error from reading a standard barometer.

An examination of the diagram will also show at a glance how the height of the thermometer is recorded. It should, however, previously be stated that the thermometer is a little larger than those in ordinary use, and has a platinum wire *a* cemented in the bulb, communicating with the mercury in the inside. When the lever L is depressed, as soon as the wire P″ touches the surface of the mercury in the stem, the circuit will be established through the electro-magnet E, and the pen P will record the thermometric height. The lever, therefore, in passing from the top to the bottom of the drum, will record the thermometer, and in passing from the bottom to the top, the barometer. In order to use the whole sheet for both instruments, the magnetic circuit is alternately shifted, so as only to pass through the thermometer when the lever is moving down, and through the barometer when it is moving up.

The thermometric record necessarily cannot be as accurate as that of the barometer, since the magnetic circuit is not so certainly completed when a platinum wire touches a surface of mercury as when it touches a smooth plate of platinum. However, using a thermometer having a scale of two or three inches for 100 Fahr., the error from this cause will ordinarily be only a small fraction of one degree.

In thermometric observations, so much depends on the locality of the thermometer, in the same place and even about the same building or station, that single hourly results, to the half of one degree Fahrenheit, will answer every purpose.

It registers hourly the barometer and wet and dry bulb thermometers.

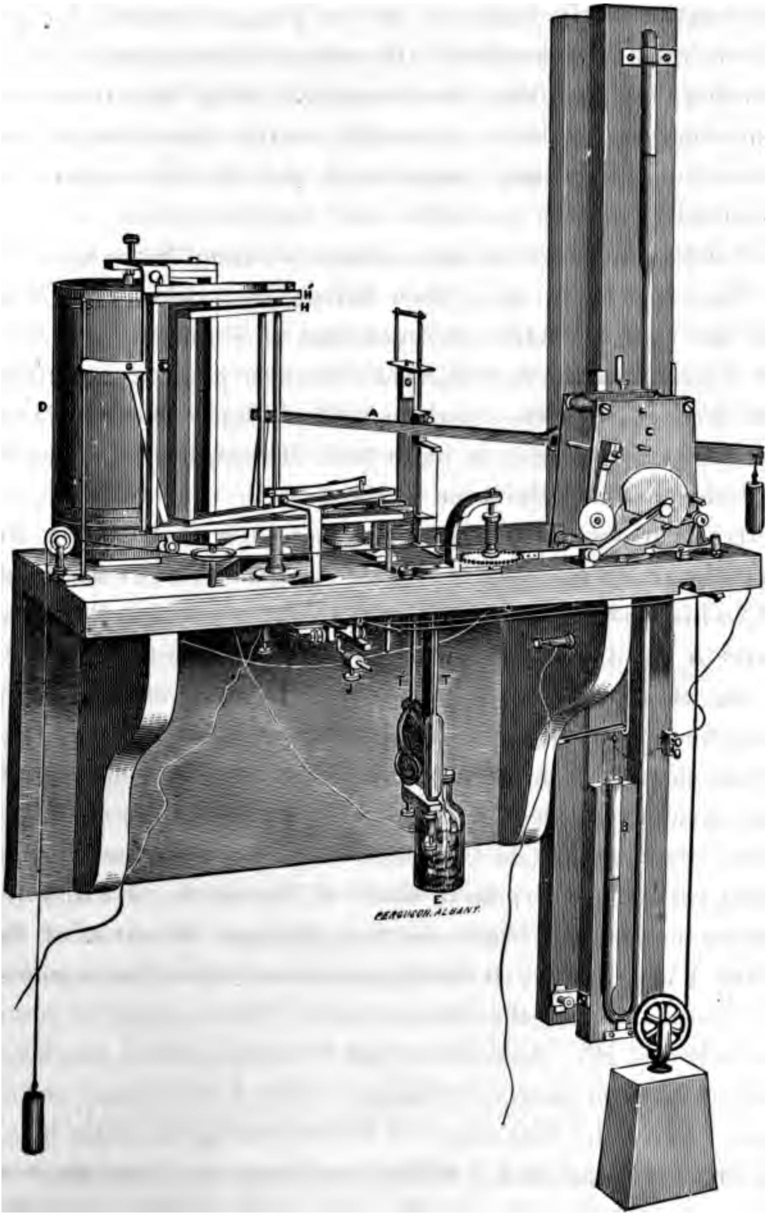


FIG. 2.

The diagram, Fig. 2, is a perspective view of this instrument. The recording lever A is a bar of iron, about two feet in length, nearly balanced on the axis, supported by the clock frame C. The clock is constructed with rather stronger gearing than an ordinary movement; its office being to elevate and depress the lever A hourly, regulate the drum D, and raise the two striking hammers H and H′. It is provided with a half second pendulum, and requires winding once in two days, the weight falling in that time about three feet.

The lower leg of the siphon barometer is shown at B, and the wet and dry bulb thermometers at T′ and T. Directly over the leg of the siphon, as also over the two thermometers, the lever A supports a carriage, which is depressed or elevated whenever the lever A is in motion. The registering point G is connected with the lever, as shown in the diagram; and the curvilinear motion of the end of the lever is converted into rectilinear, by allowing G to slide against a vertical steel rod.

To illustrate the action of the machine, we will suppose the lever A has reached its lowest point, the registering pen G being at the bottom of the drum. Now, in order that we may be able to register the barometer on any part of the drum sheet, it is necessary that the striking hammer should be elevated and locked, before the upward motion of the lever commences. As the hammers are raised by means of a snail carried by the hour shaft of the clock, at the point where the hammer begins to raise, the snail for elevating the lever A is cut away, so that it remains at rest during a period of fifteen minutes, the time required for elevating the hammers H and H′. As soon as this is accomplished, the lever begins to raise slowly, by means of the double snail on the hour shaft; the time required for traversing the drum being about fifteen minutes. When the position of the lever is such that the carriage in the rear of the clock touches the float in the lower leg of the siphon, an electric current is established through the magnet F, which unlocks the hammer H, causing the pen G to make a record on the drum sheet. After the lever has reached the top of the drum, it remains at rest fifteen minutes, while the hammers are being raised, when it is gradually depressed. So soon as the platinum wires, attached to the carriage over the thermometers, touch the surface of the mercury in the thermometer tubes, electric currents are established through the magnets F and J, simultaneously or successively unlocking the hammers, and making records as before.

A double motion of the lever is completed in one hour. During this time, the barometer, wet and dry bulb thermometers, have each been recorded once. The records of the barometer and thermometers differ in time about one-half hour. The wet and dry bulb thermometers are recorded within a minute or two of each other, depending on the difference between them.

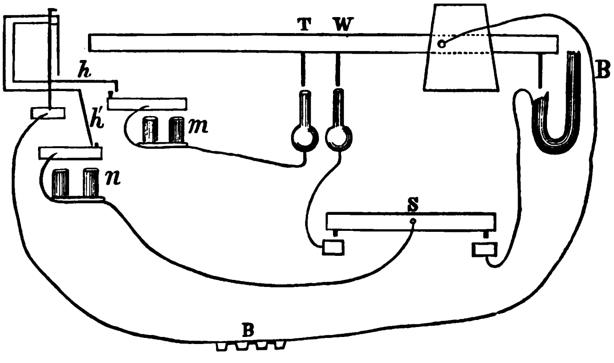


FIG. 3.

The diagram, Fig. 3, shows the arrangement of the circuits.

B=battery.

B=barometer.

T=thermometer.

W=wet bulb thermometer.

h and *h'*=the striking hammers.

m and n=the electro-magnets, for locking the hammers.
S=circuit shifter.

The current passes through the hammers and armatures of the electro-magnets, so that no current can pass except when the hammers are locked on the armatures. A slight inspection of the diagram will readily show that when the small bar at S is tilted on one side or the other, the circuit will only pass through the barometer or the thermometers, as the case may be. The shifting of the circuit is accomplished by means of a semi-circular disk on the hour shaft of the clock.

It may here be added that the circuit is only broken at the locking of the hammer and armature, never in the thermometer tubes. This is considered a very important principle of the method, since the continual breaking of the circuit in the thermometer tubes would soon oxydize the surface of the mercury, rendering the connection very uncertain.

The drum is sixteen inches in circumference and seven inches high, and revolves at the rate of one inch in twenty-four hours. The sheets are printed for the barometer, so that one readily reads by estimation to the nearest hundredth of an inch; one-tenth of an inch of pressure being equivalent to one-fourth of an inch on the sheet.

The sheets need to be changed only twice each month, but it is necessary to wind the clock every other day, unless provision is made for a greater fall of the weight.

Three elements of the Leclanche battery were supplied with the machine, but one element is capable of unlocking the hammer.

As the work required of the battery is so very small, the circuits being closed hourly only for an instant, it is presumed that these elements will perform their office for one or two years, without renewal. In fact, except for the local action, evaporation, etc., a battery ought to last for ten years without renewal, since the amount of electricity passing in the external circuit in that time, would not be so great as that flowing through a closed circuit during twenty-four hours.

In the first experiments with this method of registration, electro-magnets were used to strike the registering point, thereby dispensing with the hammers; but it was found that in order to make a fair legible record, so much battery power was necessary, that it was considered a very grave defect. Not only would the cost of maintaining numerous battery elements be considerable, but the uncertainty of keeping them up to a maximum working standard, would, it was feared, seriously interrupt the records.

In a thermograph recently constructed for my own use, the hammer can be unlocked by one small "Daniell" element, of the size of a "Groove." One ordinary Daniell, such as is used for local batteries, works the machine well. This reduction of the electrical force to a minimum is considered one of the most important features of the method.

The meteorograph, Fig. 2, was constructed for use in a room especially arranged for securing the true external temperature. In practice such an exposure of fine mechanism is a serious evil, owing to the liability of rust from rain and snow. This objection has been entirely overcome, in the recent construction of a Thermograph for C. Rathbone, Esq. The recording mechanism was placed in a room artificially heated, the thermometer tube and sliding carriage only being placed outside. The connection with the thermometer was secured by drilling a hole one-half inch in diameter through a brick wall two feet thick, and connecting the carriage carrying the platinum wire with the arm A, by means of a fine wire passing over two delicate pulleys. The top of the thermometer tube and carriage were covered with a cap, the lower part of the tube and bulb being exposed to the air.

This method has been found to work admirably. The errors introduced by this form of construction are inconsiderable, and will never amount to more than the fraction of one degree.

METEOROLOGICAL OBSERVATIONS

MADE AT THE

DUDLEY OBSERVATORY,

DURING THE YEARS

1866, '67, '68, '69, '70.

TYPO-BAROGRAPH.

JANUARY, 1866.

DATE.	0*h*.	1*h*.	2*h*.	3*h*.	4*h*.	5*h*.	6*h*.	7*h*.
1...	29.896	875	858	861	863	879	882	890
2...	30.126	121	116	112	115	104	095	084
3...	29.883	851	837	818	816	815	814	819
4...	29.624	600	610	621	632	649	651	688
5...	30.053	029	020	001	987	985	040	083
6...	30.276	272	270	275	278	288	305	315
7...	30.605	611	630	655	680	706	727	770
8...	30.852	833	810	798	791	800	798	795
9...	30.591	549	516	498	502	488	477	477
10...	30.159	125	100	075	054	039	026	010
11...	29.823	818	819	834	837	845	862	875
12...	29.850	853	825	808	795	770	748	735
13...	29.421	379	430	449	484	517	552	572
14...	29.958	958	983	004	039	077	118	166
15...	30.368	316	299	280	244	277	225	201
16...	29.575	541	555	543	530	551	557	591
17...	29.816	794	766	758	740	741	706	705
18...	......	......	......	......	......	......	......	......
19...	29.742	754	754	775	798	837	844	863
20...	29.552	537	506	467	540	632	705	761
21...	29.952	929	909	908	900	896	905	898
22...	29.867	866	873	888	916	933	971	990
23...	30.122	099	096	079	080	083	085	093
24...	30.251	232	220	217	223	220	227	219
25...	29.782	752	716	691	692	692	673	664
26...	29.697	691	693	694	702	713	728	749
27...	30.029	021	019	024	032	039	037	043
28...	30.020	994	983	971	961	958	960	961
29...	29.949	933	917	919	920	920	921	922
30...	29.723	692	651	599	581	551	568	566
31...	29.550	521	500	488	498	489	486	485

DATE.	REMARKS.
Jan. 1.	Thaw; cloudy.
" 2.	Cloudy; clear after midnight. Halo around the moon.
" 3.	Changeable.
" 4.	Clear and cold; wind at 16*h*. N. W.; thermometer —7°.
" 5.	Changeable.
" 6.	Flurries of snow. At 21*h*. thermometer —10°.
" 7.	Clear and cold; wind N. W.; thermometer at 20*h*. —17°.
" 8.	Clear; wind W.; thermometer at 10*h*. —10°.
" 9.	Clear.
" 10.	Cloudy; wind N. W.
" 11.	Cloudy; wind S.

TYPO-BAROGRAPH.

JANUARY, 1866.

DATE.	8*h*.	9*h*.	10*h*.	11*h*.	12*h*.	13*h*.	14*h*.	15*h*.
1...	883	894	923	964	966	994	014	043
2...	083	074	060	060	050	050	011	991
3...	810	794	782	778	762	752	741	743
4...	722	786	817	852	904	922	956	981
5...	103	117	116	097	070	068	071	064
6...	337	344	358	365	354	343	354	378
7...	789	810	821	830	829	822	833	837
8...	793	780	765	756	730	724	716	716
9...	454	438	414	399	368	341	327	322
10...	938	947	926	898	891	869	851	850
11...	886	889	895	900	902	897	903	904
12...	713	692	640	636	620	594	574	539
13...	567	579	615	639	632	634	647	677
14...	197	230	244	263	268	284	292	293
15...	195	176	104	067	041	013	971	937
16...	603	625	642	656	666	672	679	700
17...	675	623	623	623	623	623	641	646
18...	......	......	......	......	......	......	......	.....
19...	874	880	879	866	845	828	817	782
20...	827	831	828	834	841	859	914	914
21...	884	878	878	879	866	857	865	855
22...	001	022	033	031	032	033	041	053
23...	105	114	116	118	124	125	143	151
24...	219	214	203	177	142	103	088	065
25...	664	665	666	668	661	647	644	651
26...	770	788	804	825	840	848	868	880
27...	059	063	063	061	052	049	048	049
28...	962	963	957	957	954	945	938	932
29...	923	923	924	920	917	905	901	891
30...	567	569	562	559	554	557	586	617
31...	494	476	467	438	425	398	392	387

DATE.	REMARKS.
Jan. 12.	Snow at 8*h*.; fall of water $0^{in}.10$; clear after 15*h*.
" 13.	Cloudy; snow; fall of water $0^{in}.02$; clear after 19*h*.; high wind from N. W. at 12*h*.; at 20*h*. thermometer +27°; at 23*h*. +9°.
" 14.	Clear; wind W.
" 15.	Cloudy; snow after midnight; fall of water $0^{in}.30$.
" 16.	Cloudy; gale from N. W.; wind S. E. at 20*h*.
" 17.	Changeable.
" 18.	Cloudy.
" 19.	Cloudy.
" 20.	Cloudy; wind S. quite brisk.

TYPO-BAROGRAPH.

JANUARY, 1866.

DATE.	16*h*.	17*h*.	18*h*.	19*h*.	20*h*.	21*h*.	22*h*.	23*h*.
1...	051	061	088	101	139	159	178	162
2...	978	959	960	956	955	944	943	917
3...	730	712	693	688	678	677	672	650
4...	000	015	060	079	090	111	114	085
5...	075	103	130	171	201	241	277	287
6...	385	407	441	475	516	535	576	602
7...	838	840	854	866	881	890	893	895
8...	709	688	676	666	666	655	650	626
9...	313	304	287	269	254	240	217	189
10...	826	819	819	822	838	840	841	835
11...	904	898	892	885	871	871	864	857
12...	543	525	513	510	509	506	484	467
13...	680	713	758	799	832	892	935	958
14...	293	314	336	370	362	413	412	403
15...	903	863	824	785	746	715	679	617
16...	718	734	769	786	804	840	858	840
17...	643	663	677	690	710	726	730	726
18...	......	......	......	......	......	......	......	......
19...	757	729	700	686	872	653	628	571
20...	904	906	909	914	919	924	983	966
21...	853	850	845	860	865	872	884	879
22...	062	080	091	112	117	129	150	148
23...	160	169	164	193	198	228	234	231
24...	026	995	955	916	874	847	827	805
25...	660	663	664	671	681	684	693	700
26...	890	914	946	965	987	005	027	038
27...	032	030	029	038	044	054	054	050
28...	918	916	928	931	946	950	958	963
29...	879	872	866	864	840	810	808	768
30...	618	619	624	625	626	624	600	575
31...	376	363	346	342	334	341	325	317

DATE.	REMARKS.
Jan. 21.	Clear; wind W.
" 22.	Cloudy; wind W.
" 23.	Cloudy; wind S. E. Halo around the moon.
" 24.	Snow after 14*h*.; fall of water $0^{\text{in}}.50$.
" 25.	Snow to 20*h*.; fall of water $0^{\text{in}}.30$.
" 26.	Cloudy; flurries of snow.
" 27.	Clear.
" 28.	Changeable; snow at 20*h*.
" 29.	Cloudy; wind S.
" 30.	Cloudy; flurries of snow; clear at 20*h*.
" 31.	Changeable; wind S. E.

TYPO-BAROGRAPH.

FEBRUARY, 1866.

DATE.	0*h*.	1*h*.	2*h*.	3*h*.	4*h*.	5*h*.	6*h*.	7*h*.
1...	29.308	300	303	324	339	377	398	410
2...	29.543	525	512	514	525	533	537	537
3...	29.547	537	517	523	521	542	572	586
4...	29.687	684	690	716	748	781	814	851
5...	30.370	360	360	336	330	320	332	332
6...	30.274	292	303	344	362	380	398	429
7...	30.406	357	326	288	263	261	245	236
8...	29.936	893	875	862	854	833	819	820
9...	29.890	870	867	881	877	898	908	918
10...	29.882	863	860	855	864	871	869	883
11...	29.824	789	765	759	762	781	800	821
12...	29.902	850	804	761	732	719	736	735
13...	29.931	931	927	941	942	957	980	998
14...	29.799	751	700	683	657	625	562	512
15...	29.684	636	646	681	709	751	797	832
16...	30.410	398	393	398	401	413	422	427
17...	30.472	453	425	414	401	383	357	357
18...	30.185	151	095	071	043	004	961	929
19...	29.385	368	339	316	323	341	357	384
20...	29.841	828	804	799	812	818	827	862
21...	30.391	374	363	359	356	363	365	366
22...	30.282	262	240	226	223	225	225	234
23...	30.105	096	066	057	044	037	039	057
24...	29.644	586	554	533	524	500	482	513
25...	29.990	031	068	091	133	159	188	221
26...	30.613	590	576	573	564	558	560	568
27...	30.325	307	288	276	273	277	279	293
28...	30.339	316	296	284	280	280	288	290

DATE.	REMARKS.
Feb. 1.	Snow squall at 4 P. M.; wind S. W.
“ 2.	Snow squalls; wind W.
“ 3.	Changeable; wind W.
“ 4.	High wind from W.; clear and cold.
“ 5.	Clear to 9 P. M.; cloudy; wind W.
“ 6.	Clear and cold; thermometer —3°.
“ 7.	Cloudy.
“ 8.	Snow from 2*h*. to 23*h*.; fall of water $1^{in}.0$.
“ 9.	Cloudy; wind S. W.
“ 10.	Cloudy; thaw; wind S.
“ 11.	Rain after midnight; fall of water $0^{in}.50$.

TYPO-BAROGRAPH.

FEBRUARY, 1866.

DATE.	8*h*.	9*h*.	10*h*.	11*h*.	12*h*.	13*h*.	14*h*.	15*h*.
1...	420	417	411	409	412	412	428	441
2...	544	544	538	529	528	515	513	510
3...	596	603	603	606	611	617	619	624
4...	894	941	997	025	055	082	109	134
5...	314	303	281	257	235	208	190	186
6...	470	500	501	510	522	521	530	531
7...	220	214	202	175	169	139	117	096
8...	822	812	808	806	803	803	794	794
9...	908	908	916	892	909	915	903	902
10...	891	890	893	890	887	883	869	861
11...	823	841	864	881	881	902	904	903
12...	710	706	708	701	712	727	721	745
13...	008	016	022	024	004	000	000	986
14...	480	439	392	369	347	381	401	401
15...	873	914	951	980	015	053	100	125
16...	433	439	450	453	454	446	449	458
17...	331	310	296	288	262	246	259	260
18...	890	855	804	756	701	660	621	601
19...	417	437	473	504	515	541	571	592
20...	890	975	010	079	133	156	184	190
21...	369	373	380	361	360	348	345	334
22...	215	213	214	212	210	202	211	205
23...	036	023	003	975	945	908	884	858
24...	541	583	653	677	706	721	711	721
25...	238	258	290	314	354	382	413	430
26...	570	570	554	539	516	499	481	457
27...	291	298	300	301	301	301	302	302
28...	293	293	290	284	284	277	279	265

DATE. **REMARKS.**

Feb. 12. Rain; wind N. W.; fall of water $0^{in}.05$; froze up during the night.

" 13. Cloudy; wind N. W.

" 14. Snow flurries; rain from 8*h*. to 11*h*.; fall of water $0^{in}.20$; at 12*h*. high wind from W.

" 15. Changeable; from 8*h*. clear and cold; wind N. W.

" 16. Clear and cold.

" 17. Clear; and cloudy; wind S.

" 18. Snow and rain; fall of water $0^{in}.15$.

" 19. Cloudy; and clear.

" 20. Snow squall at 8*h*.; fine auroras at 12*h*., at 17*h*.

TYPO-BAROGRAPH.

March, 1866.

Date.	0*h*.	1*h*.	2*h*.	3*h*.	4*h*.	5*h*.	6*h*.	7*h*.
1...	30.197	180	159	142	121	117	121	118
2...	30.017	994	983	983	983	983	981	978
3...	29.896	864	859	833	820	829	830	825
4 ..	29.739	712	692	684	692	728	750	781
5...	29.797	781	774	773	774	787	802	798
6...	29.837	823	808	800	798	807	820	829
7...	29.627	619	605	608	600	612	612	619
8...	29.757	748	746	744	749	759	784	812
9...	29.734	711	689	671	659	655	679	708
10...	30.067	055	034	032	027	022	035	058
11...	29.827	778	766	750	766	782	789	801
12...	29.905	912	904	876	908	940	930	959
13...	30.143	145	129	123	108	141	183	205
14...	30.143	102	092	073	064	068	050	034
15...	29.837	786	778	745	714	695	669	638
16...	29.502	485	471	456	458	468	482	500
17...	29.526	511	525	563	588	629	667	701
18...	29.862	804	767	734	712	708	709	704
19...	29.857	837	822	828	828	837	855	861
20...	30.019	990	983	964	945	942	928	884
21...	29.437	418	387	380	427	459	507	572
22...	29.962	961	959	979	985	004	020	032
23...	29.906	887	845	807	803	780	756	741
24...	29.625	626	607	590	581	611	605	602
25...	29.503	501	490	497	493	518	521	526
26...	29.651	656	666	698	736	777	818	856
27...	......	......	......	......	......	......	......	......
28...	......	......	......	......	......	......	......	......
29...	......	......	......	......	......	......	......	......
30...	......	......	......	......	......	......	......	......
31...	29.644	598	553	524	504	484	468	470

Date.		Remarks.
March	1.	Cloudy.
"	2.	Cloudy; rain; fall of water 0^{in}.20.
"	3.	Cloudy; wind S.
"	4.	High wind at 11*h*. from W.
"	5.	High wind continues; clear; aurora at 9*h*.
"	6.	High wind continues; clear and cold.
"	7.	High wind from N. W.; changeable.
"	8.	Strong wind from W.; cloudy.
"	9.	Wind W.; changeable.
"	10.	Clear; high wind from S. began after 12*h*.; cloudy.
"	11.	Hail, snow and rain; fall of water 0^{in}.24.

TYPO-BAROGRAPH.

MARCH, 1866.

DATE.	8*h*.	9*h*.	10*h*.	11*h*.	12*h*.	13*h*.	14*h*.	15*h*.
1...	118	110	100	098	094	082	076	072
2...	981	986	980	985	972	967	961	939
3...	826	810	792	788	778	776	783	780
4...	806	805	808	800	797	789	779	781
5...	782	784	794	800	801	818	804	797
6...	817	815	808	798	796	793	784	752
7...	628	636	644	643	638	646	661	661
8...	824	826	828	826	822	822	822	816
9...	741	769	798	818	830	844	854	883
10...	083	105	104	098	089	076	071	065
11...	805	829	830	838	837	842	842	848
12...	985	002	014	005	028	039	034	023
13...	234	242	238	229	234	220	214	197
14...	044	022	014	996	982	959	950	929
15...	643	620	607	582	560	540	531	540
16...	505	502	468	458	443	451	475	489
17...	724	746	754	781	806	841	866	885
18...	688	669	662	664	664	714	755	760
19...	879	903	903	913	925	937	946	948
20...	858	820	782	757	747	714	647	609
21...	657	684	716	744	765	780	800	831
22...	081	092	072	074	067	068	076	065
23...	726	699	681	668	645	635	625	614
24...	589	588	594	587	560	544	502	448
25...	531	518	511	504	507	504	489	469
26...	887	905	922	933	952	966	976	987
27...	......	......	......	.....	......	......	......	......
28...	......	......	......	......	......	......	......	......
29...	......	......	... ..	......	......	......	......	......
30...	......	......	......	......	......	......	......	......
31...	477	477	477	475	476	477	487	494

DATE.	REMARKS.
March 12.	Rain; cloudy; no wind; fall of water $0^{in}.03$.
" 13.	Cloudy; wind S.
" 14.	Cloudy; rain; calm; fall of water $0^{in}.05$.
" 15.	Cloudy; rain; cloudy; fall of water $0^{in}.05$.
" 16.	Changeable; high wind from W., and squall at 23*h*.
" 17.	High wind from W.; changeable; snow squall at 6*h*.
" 18.	Changeable; auroral arch at 11*h*.; wind W.
" 19.	Changeable; cloudy; sprinkle of snow at 19*h*.
" 20.	Snow; cloudy; hail and rain at 19*h*.; fall of water $0^{in}.30$.
" 21.	Cloudy; wind N. W.

TYPO-BAROGRAPH.

MARCH, 1866.

DATE.	16*h*.	17*h*.	18*h*.	19*h*.	20*h*.	21*h*.	22*h*.	23*h*.
1...	061	059	059	054	054	050	041	041
2...	924	917	902	896	898	908	901	896
3...	771	769	781	787	787	780	763	752
4...	789	797	804	815	826	822	826	806
5...	817	841	857	857	856	847	850	849
6...	728	709	698	698	698	671	663	646
7...	661	680	701	723	744	750	761	763
8...	806	804	801	803	806	804	787	761
9...	903	927	960	996	027	047	057	070
10...	061	036	006	966	932	874	860	846
11...	859	862	862	884	896	902	903	907
12...	034	039	027	058	076	087	104	127
13...	195	207	208	197	190	183	184	161
14...	912	905	888	895	889	886	875	859
15...	553	564	562	563	563	554	542	506
16...	486	516	510	529	537	537	537	528
17...	904	918	920	941	945	934	905	888
18...	781	800	801	847	870	880	883	865
19...	972	979	993	023	026	029	046	023
20...	586	534	487	466	481	461	449	447
21...	861	881	894	920	940	951	953	953
22...	068	078	102	076	065	039	996	950
23...	606	596	601	619	618	621	617	629
24...	383	390	412	431	478	483	507	506
25...	462	465	485	510	542	567	589	602
26...	009	043	069	095	100	110	120	130
27...	......	......	......	......	......	......	......	......
28...	......	......	......	......	......	......	......	......
29...	......	......	......	......	......	......	......	......
30...	......	......	......	......	......	......	......	......
31...	506	526	559	591	619	648	665	672

DATE.	REMARKS.
March 22.	Clear and cloudy.
" 23.	Cloudy; snow at 7*h.*; wind N. W.
" 24.	Cloudy; snow; high wind from W.
" 25.	Clear and cloudy; wind from W.
" 26.	Cloudy; snow; wind W.
" 27.	Clear.
" 28.	Cloudy; rain and snow; fall of water $0^{in}.06$.
" 29.	Cloudy; strong wind W.
" 30.	Changeable; wind S. E.
" 31.	Rain; changeable; fall of water $0^{in}.12$.

TYPO-BAROGRAPH.

April, 1866.

Date.	0*h*.	1*h*.	2*h*.	3*h*.	4*h*.	5*h*.	6*h*.	7*h*.
1...	29.701	710	741	763	780	810	829	845
2...	29.969	972	966	962	953	944	946	957
3...	30.052	046	035	020	997	998	998	994
4...	29.966	948	930	912	893	889	888	885
5...	29.802	788	763	738	729	728	735	737
6...	29.910	911	876	894	876	886	913	910
7...	29.967	963	955	952	949	949	948	925
8...	29.897	878	876	862	860	871	873	893
9...	30.060	050	040	034	030	029	029	044
10...	30.158	135	112	083	070	059	056	070
11...	30.001	978	952	937	918	921	927	927
12...	29.947	921	895	875	860	850	838	830
13...	29.911	917	928	925	932	948	972	994
14...	29.948	912	882	861	838	817	812	807
15...	29.901	906	899	894	897	898	917	926
16...	30.111	095	082	084	091	105	121	143
17...	30.329	314	304	290	280	276	273	273
18...	30.229	194	165	142	133	120	114	120
19...	29.955	939	931	924	918	920	923	930
20...	29.801	774	743	709	689	683	675	669
21...	28.494	468	436	408	394	393	393	392
22...	29.399	389	386	379	379	399	423	448
23...	29.238	179	175	061	966	949	926	928
24...	28.872	886	917	954	988	015	038	046
25...	29.227	230	232	237	267	293	324	359
26...	29.458	479	485	488	488	488	546	563
27...	29.694	687	680	680	660	673	689	708

TYPO-BAROGRAPH.

April, 1866

Date.	8*h*.	9*h*.	10*h*.	11*h*.	12*h*.	13*h*.	14*h*.	15*h*.
1...	887	895	922	932	929	920	921	911
2...	980	006	023	028	051	057	048	051
3...	002	009	010	003	004	995	000	988
4...	903	912	919	919	921	924	913	912
5...	777	788	805	808	808	811	816	816
6...	939	957	974	996	986	980	975	992
7...	943	936	936	927	923	918	889	870
8...	915	926	932	951	952	959	974	975
9...	065	076	087	101	099	101	113	121
10...	079	092	096	101	097	098	078	060
11...	927	936	942	943	947	950	950	950
12...	827	813	809	793	786	767	757	778
13...	005	030	057	067	055	064	064	074
14...	786	754	762	757	767	762	755	762
15...	965	996	008	018	018	024	021	030
16...	171	198	215	232	235	238	238	240
17...	298	314	317	314	322	321	315	304
18...	121	092	066	061	049	033	014	003
19...	945	952	952	955	956	953	940	938
20...	667	667	673	666	655	647	636	617
21...	415	419	431	429	424	424	418	424
22...	483	501	521	535	536	524	522	515
23...	856	848	857	851	848	845	842	839
24...	075	093	100	124	146	166	180	173
25...	379	383	374	370	371	374	369	369
26...	595	606	607	609	609	611	606	606
27...	726	747	758	770	779	781	781	781
28...	......	......	......	......	......	......	......	......
29...	......	......	......	......	......	......	......	......
30...	697	715	716	718	715	702	691	689

Date.	Remarks.
April 11.	Clear.
" 12.	Clear; changeable, with rain; wind W.
" 13.	Clear; strong wind from S.
" 14.	Rain to 11*h.*; cloudy; fall of water $0^{in}.26$.
" 15.	Changeable.
" 16.	Clear.
" 17.	Changeable; strong wind S.; aurora at 9*h*.
" 18.	Changeable.
" 19.	Cloudy; shower of rain at 7*h.*; wind S.
" 20.	Clear and cloudy.

TYPO-BAROGRAPH.

APRIL, 1866.

DATE.	16*h*.	17*h*.	18*h*.	19*h*.	20*h*.	21*h*.	22*h*.	23*h*.
1...	929	936	959	971	977	983	987	982
2...	053	060	086	103	093	080	083	062
3...	986	986	981	005	994	006	002	992
4...	905	904	898	896	891	886	865	852
5...	839	863	866	889	906	904	916	921
6...	990	997	999	020	018	010	005	981
7...	876	904	912	910	902	908	906	891
8...	995	999	032	052	055	075	079	071
9...	131	142	170	183	190	194	195	173
10...	055	055	055	055	047	038	032	023
11...	956	958	975	989	989	984	984	965
12...	762	764	796	802	823	864	879	894
13...	074	081	097	083	080	067	023	005
14...	786	800	834	859	878	906	915	911
15...	032	041	067	081	093	117	130	125
16...	263	278	314	355	363	360	352	349
17...	304	304	304	298	298	292	278	259
18...	997	994	994	004	005	998	989	973
19...	934	929	926	923	907	890	856	827
20...	602	606	599	604	604	590	544	516
21...	421	421	433	433	442	443	440	423
22...	498	483	469	463	419	416	361	361
23...	836	830	827	824	827	837	857	861
24...	176	194	202	214	218	232	234	230
25...	379	400	414	430	438	447	454	458
26...	632	658	682	706	715	719	721	716
27...	770	759	756	732	724	727	678	638
28...	......	......	......	......	......	......	......	......
29...	......	......	......	......	......	......	......	......
30...	689	688	695	697	697	686	662	635

DATE.	REMARKS.
April 21.	Changeable; sprinkle of rain; clear.
" 22.	Clear; cloudy and rain; wind N. W.
" 23.	Rain; cloudy; fall of water $0^{\text{in}}.90$.
" 24.	Cloudy; changeable; wind W.
" 25.	Cloudy; wind N. W.
" 26.	Changeable; wind W.
" 27.	Changeable; wind S.
" 28.	Changeable; wind S.
" 29.	Changeable; wind W.
" 30.	Changeable; wind S. E.

TYPO-BAROGRAPH.

MAY, 1866.

DATE.	0*h*.	1*h*.	2*h*.	3*h*.	4*h*.	5*h*.	6*h*.	7*h*.
1...	29.572	550	524	489	472	453	447	438
2...	29.321	311	309	323	347	383	434	467
3...	29.570	558	554	552	561	565	556	565
4...	29.496	493	498	498	494	505	519	527
5...	29.507	506	506	503	510	531	554	578
6...	29.676	675	672	667	664	678	688	708
7...	29.986	976	954	942	915	908	903	921
8...	29.887	857	825	769	743	731	726	714
9...	29.503	525	547	541	547	554	558	566
10...	29.748	738	732	726	726	722	717	726
11...	29.739	708	697	682	675	671	670	679
12...	29.711	698	683	683	684	698	688	688
13...	29.441	384	348	298	261	349	421	474
14...	......	......	......	......	......	......	......	......
15...	29.796	764	729	702	671	644	646	646
16...	29.569	584	592	593	605	638	669	704
17...	29.782	769	766	753	743	733	728	730
18...	29.709	700	691	688	689	689	677	677
19...	29.629	625	608	592	583	581	581	581
20...	29.586	566	543	518	506	480	465	457
21...	29.404	406	388	386	399	426	442	467
22...	29.540	555	571	580	597	598	607	625
23...	29.776	762	756	756	787	797	817	827
24...	29.854	826	800	800	781	757	757	757
25...	29.606	603	600	594	594	594	585	588
26...	29.564	550	535	518	510	503	503	496
27...	29.336	313	294	291	285	259	249	231
28...	29.069	096	114	144	165	195	217	258
29...	29.420	426	426	408	403	404	411	421
30...	29.455	462	467	467	471	483	510	515
31...	29.760	766	781	789	808	831	839	869

DATE.	REMARKS.
May 1.	Cloudy, with rain at 6*h*. and 11*h*.; changeable.
" 2.	Cloudy; wind W.
" 3.	Changeable; wind W.
" 4.	Cloudy; brisk wind W.
" 5.	Cloudy; high wind W.
" 6.	Clear; wind N. E.
" 7.	Clear and pleasant; wind N. W.
" 8.	Cloudy; high wind W.
" 9.	Clear; wind N. W.
" 10.	Changeable; wind N. W.
" 11.	Clear; hazy; wind S.

TYPO-BAROGRAPH.

May, 1866.

Date.	8*h*.	9*h*.	10*h*.	11*h*.	12*h*.	13*h*.	14*h*.	15*h*.
1...	423	398	385	354	323	277	260	237
2...	488	497	501	506	507	507	507	508
3 ..	574	577	577	564	564	564	559	561
4...	531	543	542	525	518	506	496	493
5...	597	620	626	627	632	629	638	642
6...	736	761	783	794	829	850	867	893
7...	943	949	953	952	947	944	944	944
8...	711	711	689	663	623	587	566	543
9...	587	603	604	612	621	621	616	628
10...	730	733	745	746	747	747	742	744
11...	688	704	711	712	718	718	718	713
12...	691	692	692	686	673	667	660	648
13...	480	502	534	550	556	557	561	579
14...	......	......	......	......	......	......	......	......
15...	659	661	654	646	629	613	593	568
16...	722	741	746	755	764	762	763	768
17...	740	745	747	747	743	743	739	733
18...	677	677	677	672	667	663	661	653
19...	589	607	621	627	627	613	618	621
20 ..	457	461	449	460	459	459	441	436
21...	499	522	504	492	486	475	443	433
22...	642	660	665	675	686	690	703	708
23...	841	863	865	866	862	856	844	842
24...	753	753	748	733	711	702	690	671
25...	590	594	591	583	583	583	573	568
26...	496	514	515	520	513	502	495	481
27...	223	228	209	200	143	104	111	101

TYPO-BAROGRAPH.

MAY, 1866.

DATE.	16*h*.	17*h*.	18*h*.	19*h*.	20*h*.	21*h*.	22*h*.	23*h*.
1...	229	229	229	246	266	289	318	327
2...	516	536	549	564	578	567	561	561
3...	563	568	574	566	554	543	522	496
4...	496	505	520	520	520	516	508	506
5...	646	658	666	683	695	703	700	687
6...	908	943	967	971	982	987	998	999
7...	944	948	962	979	963	946	935	912
8...	496	463	467	463	453	459	457	479
9...	646	666	691	715	731	743	755	758
10...	744	746	760	768	769	769	762	746
11...	712	712	721	730	738	740	740	727
12...	626	621	605	590	571	546	524	475
13...	583	617	637	658	667	671	678	689
14...	......	......	......	......	......	......	......	......
15...	561	550	549	539	550	543	544	578
16...	773	773	781	782	783	787	788	787
17...	733	733	741	744	747	748	743	730
18...	653	654	658	662	663	664	661	650
19...	627	635	654	660	666	647	632	604
20...	439	440	457	460	448	442	427	413
21...	432	434	458	469	479	487	506	523
22...	713	733	747	768	776	776	773	776
23...	841	855	867	881	883	883	884	874
24...	660	660	660	649	645	640	631	625
25...	572	585	587	591	589	581	581	572
26...	474	470	466	455	447	424	391	363
27...	091	084	076	074	074	064	046	058
28...	378	398	413	427	424	420	415	416
29...	419	419	418	425	427	436	446	451
30...	543	569	603	648	669	684	704	730
31...	017	029	039	052	053	038	033	016

DATE.	REMARKS.
May 22.	Sprinkle of rain; cloudy; wind W.
" 23.	Cloudy; wind W.; changeable; wind N. W.
" 24.	Cloudy.
" 25.	Changeable; wind S. E.
" 26.	Cloudy and rain; wind S.
" 27.	Rain; wind N. W.; fall of water $1^{in}.50$.
" 28.	Changeable; rain; wind S. E.
" 29.	Cloudy, with rain; wind W.
" 30.	Changeable; sprinkle of rain; wind W.
" 31.	Clear; wind S. W.

TYPO-BAROGRAPH.

June, 1866.

Date.	8*h*.	9*h*.	10*h*.	11*h*.	12*h*.	13*h*.	14*h*.	15*h*.
1...	875	888	891	892	893	893	885	87
2...	732	745	749	751	751	751	754	741
3...	695	699	703	704	698	686	658	65
4...	647	654	671	689	704	704	704	70
5...	662	665	677	681	682	670	644	662
6...	512	527	540	547	541	529	517	491
7...	509	529	531	529	517	517	525	531
8...	797	810	818	834	852	867	878	904
9...	938	950	943	937	929	926	927	927
10...	886	888	888	890	891	891	891	891
11...	915	938	938	938	938	920	924	929
12...	......	......	......	......	......	......	......	......
13...	......	......	......	......	......	......	......	......
14...	587	587	586	588	583	583	583	582
15...	535	579	593	599	599	599	596	602
16...	627	635	662	668	687	696	698	709
17...	606	597	555	514	483	430	405	349
18...	419	459	461	473	493	481	481	482
19...	703	714	734	743	747	750	754	773
20...	848	858	863	866	873	873	876	877
21...	759	752	752	752	752	741	727	727
22...	663	681	688	698	700	700	701	701
23...	686	704	718	731	741	744	745	746
24...	841	857	859	861	862	862	862	862
25...	796	810	810	794	796	796	797	814
26...	......	......	......	......	......	......	......	......
27...	591	594	599	607	616	620	621	621

TYPO-BAROGRAPH.

JUNE, 1866.

DATE.	0*h*.	1*h*.	2*h*.	3*h*.	4*h*.	5*h*.	6*h*.	7*h*.
1...	29.983	960	945	925	910	891	883	875
2...	29.835	810	794	775	748	733	730	732
3...	29.732	718	730	730	730	699	694	694
4...	29.655	656	652	648	645	630	630	633
5...	29.696	680	673	673	673	658	661	661
6...	29.567	521	479	441	427	508	518	504
7...	29.474	467	474	481	481	482	492	501
8...	29.637	664	690	705	723	728	752	770
9...	29.949	949	940	935	931	921	922	926
10...	29.947	928	904	889	874	861	870	880
11...	29.935	922	900	886	880	882	889	905
12...	......	......	......	......	......	......	......	......
13...	......	......	......	......	......	......	......	......
14...	29.590	590	595	598	633	613	613	610
15...	29.549	540	531	522	512	510	510	526
16...	29.628	625	620	617	625	624	628	625
17...	29.726	715	705	673	673	666	666	623
18...	29.383	384	384	384	384	385	399	418
19...	29.619	624	609	614	621	626	647	676
20...	29.893	869	867	857	855	848	848	848
21...	29.867	855	826	802	783	767	762	762
22...	29.702	692	678	657	632	641	642	656
23...	29.718	718	711	703	699	695	686	686
24...	29.859	859	849	849	846	843	843	841
25...	29.855	849	823	802	793	789	785	785
26...	......	......	......	......	......	......	......	......
27...	29.537	518	509	540	556	549	549	560
28...	29.698	700	700	700	700	703	724	738
29...	29.861	854	854	854	854	844	839	837
30...	29.907	902	902	902	913	912	933	940

DATE. REMARKS.

June 1. Changeable; wind S. E.
" 2. Cloudy; rain; wind S.
" 3. Rain; wind S.; fall of water $1^{\text{in}}.00$.
" 4. Cloudy, with wind S.
" 5. Cloudy, with rain; wind S.
" 6. Heavy showers of rain; thunder and lightning; fall of water $2^{\text{in}}.00$.
" 7. Cloudy; wind N. W.
" 8. Cloudy; wind S. E.
" 9. Cloudy.
" 10. Clear; wind N.

TYPO-BAROGRAPH.

June, 1866.

Date.	16*h*.	17*h*.	18*h*.	19*h*.	20*h*.	21*h*.	22*h*.	23*h*.
1...	873	873	880	889	889	881	873	855
2...	736	736	755	755	749	749	742	743
3...	650	649	666	660	646	638	640	644
4...	708	708	711	729	721	723	711	713
5...	642	642	638	640	642	650	647	610
6...	481	481	481	478	476	469	456	463
7...	547	568	581	599	613	621	629	631
8...	922	930	943	967	970	977	983	972
9...	934	945	954	955	955	962	962	962
10...	899	911	921	931	936	955	956	950
11...	927	929	935	939	946	950	950	937
12...	......	......	......	......	......	......	......	......
13...	......	......	......	......	......	......	......	......
14...	583	583	575	575	575	574	574	562
15...	616	614	616	632	636	637	638	637
16...	699	707	708	722	736	736	736	736
17...	345	345	345	345	345	372	384	388
18...	499	527	530	552	570	579	596	613
19...	787	809	836	859	880	887	892	893
20...	877	889	890	894	899	900	900	890
21...	721	712	716	722	723	720	715	709
22...	701	705	723	727	728	723	735	735
23...	776	803	824	847	851	857	858	859
24...	862	862	863	864	869	876	868	860
25...	819	827	836	837	847	859	861	831
26...	......	......	......	......	......	......	......	......
27...	627	639	658	671	677	695	696	698
28...	809	821	833	858	859	860	861	861
29...	884	890	893	897	903	906	907	907
30...	020	041	055	057	070	085	085	072

Date.	Remarks.
June 21.	Clear; wind S.; hazy.
" 22.	Cloudy; rain; fall of water $0^{in}.04$.
" 23.	Clear.
" 24.	Clear and warm.
" 25.	Changeable.
" 26.	Changeable.
" 27.	Heavy showers of rain; thunder and lightning; fall of water $2^{in}.25$.
" 28.	Cloudy; changeable; wind N. W.
" 29.	Changeable; wind N. W.
" 30.	Changeable.

TYPO-BAROGRAPH.

JULY, 1866.

DATE.	0*h*.	1*h*.	2*h*.	3*h*.	4*h*.	5*h*.	6*h*.	7*h*.
1...	30.061	051	051	041	041	030	030	028
2...	30.057	052	037	030	023	015	006	994
3...	29.859	831	822	793	786	773	748	748
4...	29.657	636	613	598	593	586	586	586
5...	29.753	753	753	753	743	743	743	743
6...	29.773	757	756	746	718	716	712	711
7...	29.733	723	705	699	692	685	703	703
8...	29.677	662	637	628	624	624	632	639
9...	29.818	832	847	859	860	876	895	911
10...	30.024	018	005	993	985	976	963	961
11...	29.957	944	926	906	898	893	893	893
12...	29.881	837	818	796	772	746	740	734
13...	29.683	668	652	646	628	625	626	649
14...	29.830	797	794	793	790	784	779	788
15...	29.792	779	762	750	737	731	731	742
16...	29.842	842	831	824	824	826	824	821
17...	29.791	773	752	732	747	746	755	760
18...	29.639	615	582	554	591	565	559	555
19...	29.801	810	816	821	821	823	829	838
20...	29.949	937	931	912	906	900	897	896
21...	29.811	794	781	766	757	743	731	732
22...	29.640	627	620	598	590	586	583	581
23...	29.496	518	522	529	527	545	579	599
24...	29.779	777	767	756	751	747	745	741
25...	29.779	753	758	803	779	776	799	803
26...	29.909	888	879	875	863	849	842	846
27...	29.799	773	755	740	727	707	710	715
28...	29.583	556	555	550	551	541	570	584
29...	29.561	555	550	542	539	534	537	540
30...	29.604	590	589	624	638	638	633	630
31...	29.726	712	707	702	700	702	702	706

DATE. **REMARKS.**

July 1. Clear; wind S.
" 2. Cloudy; clear and pleasant; wind S. E.
" 3. Changeable and hazy; wind S. E.
" 4. Clear; heavy shower at 5*h.*; fall of water $0^{in}.30$; cloudy; wind S. E.
" 5. Cloudy; wind S. E.
" 6. Shower of rain; fall of water $0^{in}.05$; wind S. E.; clear.
" 7. Showers of rain; thermometer at 3*h.*, 99° in the shade.
" 8. Cloudy, with showers; rain fall $1^{in}.20$.
" 9. Changeable; wind N. W.
" 10. Clear; hazy; wind S.
" 11. Changeable; wind S. E.

TYPO-BAROGRAPH.

July, 1866.

Date.	8*h*.	9*h*.	10*h*.	11*h*.	12*h*.	13*h*.	14*h*.	15*h*.
1...	028	036	048	054	055	056	061	061
2...	986	982	976	966	959	953	943	939
3...	743	743	743	741	738	733	728	728
4...	593	614	619	625	639	643	654	660
5...	744	759	767	768	768	764	758	768
6...	711	712	715	716	716	716	716	716
7..	703	703	703	703	704	704	703	704
8...	658	674	678	683	690	692	692	698
9...	929	946	958	975	983	992	996	003
10...	960	960	960	960	961	962	962	962
11...	897	904	909	913	914	909	906	907
12...	732	735	736	737	724	722	716	708
13...	650	663	680	680	695	698	705	699
14...	798	817	820	818	815	815	815	809
15...	743	755	764	775	781	784	789	887
16...	821	835	832	829	830	828	824	827
17...	747	738	740	744	738	722	716	700
18...	557	568	577	583	597	616	623	642
19...	859	877	893	897	902	913	905	904
20...	896	905	900	893	896	891	880	875
21...	734	741	744	728	720	712	695	672
22...	583	586	587	583	556	525	501	466
23...	624	646	662	678	686	696	706	713
24..	751	762	764	778	782	782	775	768
25...	819	833	835	841	838	837	837	844
26...	853	857	857	851	847	847	855	840
27...	714	714	716	720	718	707	703	692
28...	576	568	568	577	565	555	555	559
29...	549	561	564	570	572	575	578	570
30...	638	661	663	666	671	667	661	666
31...	719	734	737	746	747	755	745	740

Date. **Remarks.**

July 12. Clear; brisk wind N. W.
" 13. Changeable; thunder shower at 9*h.;* fall of water $0^{in}.20$.
" 14. Changeable; warm; wind W.
" 15. Clear and warm; wind W.
" 16. Clear; wind W.
" 17. Changeable; thunder shower at 6 P. M.; fall of water $0^{in}.15$.
" 18. Heavy thunder shower at 3½*h.;* rain; fall of water $2^{in}.20$; wind N. W.
" 19. Cloudy; wind S.
" 20. Cloudy; wind S. E.
" 21. Cloudy; wind N. W.

TYPO-BAROGRAPH.

July, 1866.

Date.	16*h*.	17*h*.	18*h*.	19*h*.	20*h*.	21*h*.	22*h*.	23*h*.
1...	061	069	082	090	092	079	071	065
2...	936	934	934	934	927	906	896	871
3...	727	728	728	728	708	703	679	668
4...	669	695	715	740	758	766	766	766
5...	768	770	774	776	777	778	778	778
6...	735	739	744	748	748	750	743	737
7...	704	704	704	704	704	704	699	693
8...	711	730	739	771	779	780	809	814
9...	014	054	054	055	057	060	085	085
10...	962	962	962	967	974	994	996	980
11...	909	910	918	929	930	928	924	908
12...	701	704	708	701	701	699	697	693
13...	717	737	737	762	787	812	828	831
14...	816	821	821	823	826	828	825	815
15...	887	887	887	887	856	847	845	848
16...	830	830	834	839	833	826	822	812
17...	702	704	706	710	708	699	681	667
18...	662	694	730	748	780	788	804	805
19...	918	949	970	976	976	967	976	956
20...	875	875	872	872	869	864	855	841
21...	672	672	672	672	672	672	666	640
22...	466	486	498	505	506	503	500	498
23...	725	746	762	782	788	785	790	785
24...	775	782	786	786	789	792	790	783
25...	852	868	874	885	899	904	909	907
26...	842	842	844	846	842	838	825	813
27...	692	685	685	682	671	671	659	640
28...	566	574	578	580	579	579	577	566
29...	580	566	599	634	622	618	612	615
30...	675	695	706	717	730	732	734	725
31...	738	738	732	733	724	710	695	680

Date. Remarks.

July 22. Rain; wind N. W.; fall of water 0$^{\text{in}}$.60.
" 23. Rain to 5*h.;* clear.
" 24. Changeable; wind S. E.
" 25. Thunder shower from 0*h.* to 5*h.;* gale from N. W.; cloudy; wind S.; fall of water 0$^{\text{in}}$.30.
" 26. Changeable; wind S. E.
" 27. Cloudy; shower at 6 P. M.
" 28. Cloudy; heavy shower at 6*h.;* fall of water 0$^{\text{in}}$.40.
" 29. Changeable.
" 30. Heavy shower at 2 P. M., lasting one hour; wind N. W.
" 31. Changeable; wind S.

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[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	715
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	771

TYPO-BAROGRAPH.

AUGUST, 1866.

DATE.	8*h.*	9*h.*	10*h.*	11*h.*	12*h.*	13*h.*	14*h.*	15*h.*
1...	582	582	578	578	578	571	560	553
2...	587	601	605	617	624	628	629	627
3...	780	786	783	778	770	755	741	726
4...	591	605	626	629	640	640	664	656
5...	706	710	709	708	698	686	675	670
6...	727	731	731	725	726	727	729	730
7...	742	749	750	754	739	733	726	721
8...	639	640	634	618	606	587	566	535
9...	547	559	566	571	578	581	585	585
10...	785	793	806	822	831	838	846	854
11...	......	......	......	......	......	......	......	......
12...	931	937	933	925	926	921	910	904
13...	841	835	825	815	815	807	801	799
14...	745	749	745	734	740	738	727	726
15...	843	874	885	899	910	915	915	920
16...	945	954	963	971	975	952	946	941
17...	825	829	834	846	850	841	832	829
18...	726	719	712	705	705	702	680	669
19...	548	543	540	537	533	527	537	547
20...	667	684	697	705	713	703	702	702
21...	679	676	663	646	640	628	607	596
22...	630	654	667	672	673	660	649	636
23...	577	580	568	568	576	582	580	580
24...	721	740	749	759	771	774	766	766
25...	......	......	......	......	......	......	......	......
26...	728	729	735	740	737	740	740	741
27...	780	780	780	798	798	798	805	805
28...	783	785	788	789	789	789	782	782
29...	677	676	673	671	671	673	673	679
30...	690	721	721	721	722	722	724	724
31...	761	790	794	800	802	803	795	793

DATE. REMARKS.

Aug. 12. Cloudy; rain at 18*h.*; fall of water to 0*h.* $0^{in}.50$.
" 13. Cloudy; sprinkle of rain.
" 14. Cloudy; rain at 10*h.*; fall of water $0^{in}.50$.
" 15. Cloudy; shower at 3*h.*; wind N.
" 16. Clear ; wind N. W.
" 17. Clear; wind S. E.
" 18. Cloudy; sprinkle of rain.
" 19. Cloudy; rain; fall of water $0^{in}.30$.
" 20. Changeable.
" 21. Cloudy; showers; fall of water $0^{in}.10$.

TYPO-BAROGRAPH.

AUGUST, 1866.

DATE.	16h.	17h.	18h.	19h.	20h.	21h.	22h.	23h.
1...	553	553	554	557	558	558	547	540
2...	628	640	667	691	713	731	741	745
3...	727	717	719	719	700	683	678	659
4...	660	667	679	684	679	681	696	690
5...	666	670	671	677	680	682	697	702
6...	732	734	736	738	740	741	743	733
7...	734	744	751	760	767	765	750	739
8...	525	518	504	504	499	493	485	481
9...	594	606	627	654	667	684	695	698
10...	866	881	897	910	913	916	920	923
11...	......	......	......	......	......	......	......	......
12...	895	895	895	897	893	898	905	901
13...	793	789	789	790	789	788	788	781
14...	714	712	722	740	740	743	747	748
15...	919	927	949	964	979	977	974	956
16...	939	949	955	954	946	936	921	908
17...	831	841	845	851	854	840	828	817
18...	661	663	662	640	641	643	624	620
19...	558	568	578	589	600	611	622	620
20...	716	730	746	758	758	758	744	729
21...	583	578	573	563	551	543	540	538
22...	641	663	656	658	654	654	666	657
23...	585	599	626	623	630	638	654	656
24...	775	783	799	817	814	820	816	808
25...	......	......	......	......	......	......	......	......
26...	743	757	771	785	787	791	787	784
27...	805	805	805	809	833	830	834	838

TYPO-BAROGRAPH.

September, 1866.

Date.	0h.	1h.	2h.	3h.	4h.	5h.	6h.	7h.
1...	29.771	761	743	741	708	706	699	703
2...	29.649	640	629	620	631	631	632	639
3...	29.848	849	831	824	816	813	806	805
4...	29.792	784	767	765	759	760	749	749
5...	29.680	674	658	651	638	630	625	655
6...	......	......	......	......	......	......	......	......
7...	29.860	840	817	786	758	725	701	676
8...	29.543	549	561	585	596	629	656	684
9...	29.866	878	856	860	873	890	928	948
10...	29.981	952	947	941	935	929	923	917
11...	......	......	......	......	......	......	......	......
12...	29.486	479	482	486	502	506	520	535
13...	29.694	710	708	712	709	724	748	748
14...	29.793	752	703	667	645	630	630	632
15...	30.006	002	005	001	001	049	061	094
16...	30.176	146	122	114	094	084	074	058
17...	29.797	780	773	774	774	768	762	756
18...	29.719	720	713	721	717	718	719	724
19...	29.691	662	667	665	675	679	696	717
20...	29.843	818	816	804	794	788	799	782
21...	29.601	574	558	575	626	683	713	734
22...	29.892	889	901	904	906	929	949	981
23...	30.140	115	104	110	109	107	108	119
24...	30.103	098	093	093	086	091	081	078
25...	29.971	947	921	899	873	866	854	837
26...	29.841	813	808	819	800	805	822	830
27...	29.944	917	915	915	900	918	936	955
28...	30.150	129	128	103	089	089	092	095
29...	......	......	......	......	......	......	......	......
30...	29.907	884	866	860	859	850	860	869

Date. **REMARKS.**

Sept. 1. Cloudy; wind S. E.
" 2. Changeable; wind S.
" 3. Cloudy; rain at 12*h.;* wind S. E.
" 4. Cloudy; wind S. W.
" 5. Shower of rain at 6*h.;* fall of water $0^{in}.50$.
" 6. Changeable; wind S. E.
" 7. Rain to 15*h.;* fall of water $0^{in}.60$; wind W.
" 8. Changeable; brisk wind W.
" 9. Changeable; light shower of rain.
" 10. Clear, then cloudy, with sprinkle of rain.

TYPO-BAROGRAPH.

SEPTEMBER, 1866.

DATE.	8*h*.	9*h*.	10*h*.	11*h*.	12*h*.	13*h*.	14*h*.
1...	718	703	703	709	704	685	676
2...	654	684	707	706	708	708	743
3...	822	825	834	843	825	815	812
4...	749	749	748	746	742	712	697
5...	678	710	720	734	748	762	776
6...	......	......	......	......	......	......	......
7...	651	626	601	576	551	526	508
8...	742	751	771	772	773	795	808
9...	964	967	970	980	994	012	011
10...	911	905	899	895	899	885	873
11...	......	......	......	......	......	......	......
12...	534	533	533	533	533	539	547
13...	748	796	810	816	828	828	825
14...	652	665	732	752	764	779	793
15...	094	146	151	155	156	162	160
16...	053	048	035	021	009	978	957
17...	762	758	767	752	742	726	706
18...	719	732	736	730	724	708	702
19...	753	783	795	796	815	815	816
20...	776	766	740	740	736	732	714
21...	714	736	753	759	766	773	780
22...	016	038	060	062	068	086	088
23...	116	112	121	133	135	142	143
24...	079	090	088	100	090	081	079
25...	829	815	809	816	816	809	799
26...	855	831	835	832	842	830	829
27...	956	988	010	010	037	047	066

TYPO-BAROGRAPH.

September, 1866.

Date.	16*h.*	17*h.*	18*h.*	19*h.*	20*h.*	21*h.*	22*h.*	23*h.*
1...	664	664	675	681	671	675	668	658
2...	781	791	812	838	836	864	868	868
3...	803	812	819	827	827	820	812	797
4...	690	699	704	710	710	711	706	696
5...	804	808	826	841	845	858	856	840
6...	......	......	......	......	......	......	......	......
7...	509	505	507	529	545	541	541	540
8...	826	826	845	846	839	849	864	868
9...	012	006	006	016	026	032	025	002
10...	860	858	852	854	843	813	795	766
11...	......	......	......	......	......	......	......	......
12...	585	597	621	622	665	676	688	692
13...	830	835	847	831	844	841	852	832
14...	843	870	890	930	952	973	984	997
15...	160	175	182	198	204	226	215	196
16...	924	906	904	899	881	862	851	820
17...	699	706	718	712	709	734	733	722
18...	702	702	707	704	711	715	711	700
19...	819	831	850	867	827	868	863	856
20...	664	668	673	675	651	647	640	622
21...	794	801	808	815	815	856	869	886
22...	106	116	141	153	167	180	175	154
23...	150	147	153	167	165	175	161	141
24...	068	065	060	064	064	047	030	009
25...	800	790	791	792	786	797	799	818
26...	860	878	906	907	914	942	944	944
27...	090	106	116	146	160	179	180	154
28...	112	120	122	130	129	130	120	101
29...	......	......	......	......	......	......	......	......
30...	955	971	993	009	028	039	040	032

Date. Remarks.

Sept. 21. Heavy rain; fall of water $1^{in}.75$; wind W.
" 22. Clear and pleasant; wind W.
" 23. Clear and pleasant; wind W.
" 24. Cloudy; wind S.
" 25. Clear to 12*h.*; cloudy, with rain; wind S.
" 26. Rain to 12*h.*; fall of water $0^{in}.50$; wind N. W.
" 27. Clear.
" 28. Changeable; wind S. E.
" 29. Changeable; wind N. W.
" 30. Hazy; wind N. W.

TYPO-BAROGRAPH.

October, 1866.

Date.	0h.	1h.	2h.	3h.	4h.	5h.	6h.	7h.
1...	30.025	010	985	984	978	971	967	969
2...	29.834	792	752	722	709	697	686	667
3...	29.732	731	721	719	731	753	775	795
4...	29.997	983	979	984	002	026	065	099
5...	30.384	387	387	347	341	339	335	341
6...	30.277	253	253	193	179	177	173	173
7...	80.024	988	967	947	924	922	927	929
8...	29.859	847	846	845	808	818	825	832
9...	30.015	012	018	017	025	032	059	070
10...	30.119	084	064	054	051	051	059	065
11...	29.992	992	964	951	942	938	940	942
12...	29.865	859	828	822	818	814	815	814
13...	29.781	767	759	756	759	771	785	797
14...	29.904	899	897	903	908	917	929	944
15...	30.053	034	033	044	047	061	075	104
16...	30.067	049	024	005	993	982	966	955
17...	29.777	764	752	746	757	763	780	793
18...	29.973	956	943	942	940	943	945	947
19...	29.986	965	948	940	941	941	946	952
20...	30.013	989	979	968	962	959	964	964
21...	29.937	905	876	858	851	839	835	840
22...	29.659	632	622	620	619	621	623	624
23...	29.658	633	604	598	596	596	598	604
24...	29.661	652	653	646	654	663	663	691
25...	29.979	975	977	982	992	005	025	039
26...	30.046	014	985	965	958	951	938	914
27...	29.841	833	843	851	873	887	917	935
28...	......	......	......	......	......	......	......	......
29...	29.943	914	871	851	827	812	801	783
30...	29.317	309	325	351	353	383	383	424
31...	29.679	689	708	748	763	795	843	872

Date.	Remarks.
Oct. 1.	Changeable; wind S. E.
" 2.	Cloudy; brisk wind N.
" 3.	Changeable; wind N.
" 4.	Cloudy; wind N.
" 5.	Changeable; wind S.
" 6.	Clear.
" 7.	Clear.
" 8.	Changeable; wind S.
" 9.	Cloudy; wind S.
" 10.	Changeable; wind S.

YPO-BAROGRAPH.

OCTOBER, 1866.

10*h*.	11*h*.	12*h*.	13*h*.	14*h*.	15*h*.
978	981	974	975	959	944
660	639	622	607	602	599
847	860	868	876	882	900
172	192	202	219	235	240
342	346	346	342	340	337
163	152	142	138	130	120
910	905	899	898	897	892
860	868	872	881	892	906
089	099	112	116	110	105
068	063	059	060	044	031
942	936	928	915	903	900
799	784	764	761	755	755
819	820	820	816	816	819
964	972	980	989	990	995
114	114	120	122	118	111
924	911	902	880	859	833
841	860	865	867	871	876
985	985	983	985	989	985
981	979	979	983	986	989
970	971	971	971	982	975
862	851	840	830	817	796
676	677	683	684	688	687
639	645	646	647	647	640
735	744	766	789	818	832
75	085	089	101	109	104
84	863	846	833	820	815
85	983	001	015	021	029
..	......	......	......	......	.....
04	665	675	578	536	475
03	497	506	514	528	531
14	922	935	944	952	960

REMARKS.

l of water $0^{in}.05$.

of rain; wind N. W.
W.

d N.
d S.
d S. E.
k wind S.

TYPO-BAROGRAPH.

OCTOBER, 1866.

DATE.	16*h*.	17*h*.	18*h*.	19*h*.	20*h*.	21*h*.	22*h*.	23*h*.
1...	939	939	936	924	919	904	898	859
2...	599	607	626	651	672	687	700	717
3...	911	927	947	974	991	000	009	004
4...	253	266	279	310	341	371	401	388
5...	338	339	339	340	340	346	326	308
6...	117	113	117	113	108	101	080	059
7...	891	887	887	887	887	882	870	866
8...	915	929	944	971	983	986	996	004
9...	099	093	103	118	131	134	134	130
10...	031	031	031	036	040	040	041	023
11...	891	891	891	891	891	891	891	890
12...	753	762	774	783	797	798	799	797
13...	829	845	872	877	882	886	886	903
14...	018	030	036	063	067	068	068	062
15...	112	115	118	122	127	119	107	091
16...	819	818	812	812	812	812	805	795
17...	889	901	925	946	958	976	984	979
18...	992	003	011	026	036	037	017	008
19...	003	007	019	029	049	051	051	036
20...	968	968	979	985	993	983	974	961
21...	779	769	747	731	721	719	701	678
22...	695	696	697	698	698	696	685	678
23...	638	639	646	651	665	666	676	669
24...	863	881	907	938	961	980	985	993
25...	105	107	103	094	093	082	075	067
26...	797	793	800	809	824	825	827	836
27...	043	055	069	083	101	109	109	108
28...	......	......	......	......	......	......	......	......
29...	440	404	402	402	402	356	354	337
30...	552	561	588	605	630	649	672	682
31...	978	994	012	030	037	040	040	021

DATE.	REMARKS.
Oct. 21.	Cloudy; brisk wind S. E.
" 22.	Changeable; sprinkle of rain; wind S. E.
" 23.	Cloudy; wind W.
" 24.	Changeable; wind W.
" 25.	Changeable; wind S. E.
" 26.	Cloudy; rain at 6*h*.; fall of water 0^{in}.02.
" 27.	Cloudy; sprinkle of rain.
" 29.	Rain; fall of water 1^{in}.20; wind W.
" 30.	Cloudy; sprinkle of rain at 6*h*.
" 31.	Changeable; wind S. E.

TYPO-BAROGRAPH.

NOVEMBER, 1866.

DATE.	0h.	1h.	2h.	3h.	4h.	5h.	6h.	7h.
1...	30.026	995	973	952	926	920	912	894
2...	29.812	815	815	809	838	871	909	944
3...	30.122	121	121	120	116	114	124	130
4...	30.219	210	217	225	237	254	285	301
5...	30.442	407	385	377	368	373	380	381
6...	30.326	302	280	270	263	254	258	256
7...	30.110	107	008	001	988	986	988	981
8...	29.868	848	829	820	819	826	843	842
9...	29.869	859	852	845	845	846	855	859
10...	29.850	845	848	851	850	850	854	866
11...	29.822	805	779	752	754	725	725	709
12...	29.885	882	889	892	906	924	944	971
13...	30.164	148	130	133	133	140	153	166
14...	30.159	137	123	101	092	084	078	055
15...	29.810	771	724	674	622	603	578	545
16...	29.071	093	123	147	168	184	216	.235
17...	29.484	506	540	576	604	628	649	656
18...	29.739	728	732	744	752	771	783	801
19...	29.765	733	718	700	685	686	685	688
20...	29.349	346	329	337	351	369	379	393
21...	29.503	502	502	502	584	607	625	650
22...	29.703	691	672	672	662	662	655	656
23...	29.627	630	630	627	690	691	729	743
24...	29.805	805	790	790	782	778	775	772
25...	29.981	983	017	037	053	065	086	099
26...	30.095	070	056	052	053	053	052	060
27...	30.049	039	016	012	007	005	006	006
28...	29.827	810	770	756	727	717	705	712
29...	29.612	590	563	543	531	549	547	546
30...	29.342	373	406	427	453	503	529	553

DATE.	REMARKS.
Nov. 1.	Changeable; wind S.
" 2.	Cloudy; wind N. W.
" 3.	Cloudy; wind N.
" 4.	Clear; wind N. W.
" 5.	Clear; wind N.
" 6.	Clear; wind N.
" 7.	Changeable; wind W.
" 8.	Changeable; wind W.
" 9.	Clear; wind W.
" 10.	Changeable; rain; wind S. E.

TYPO-BAROGRAPH.

November, 1866.

Date.	8*h*.	9*h*.	10*h*.	11*h*.	12*h*.	13*h*.	14*h*.	15*h*.
1...	875	848	849	839	833	817	812	792
2...	967	967	997	000	994	002	002	002
3...	131	140	159	163	163	167	167	168
4...	324	344	364	371	386	389	391	398
5...	385	383	386	385	377	377	379	372
6...	251	248	248	233	233	215	206	201
7...	966	964	952	951	943	934	929	925
8...	849	852	853	854	861	861	866	865
9...	859	861	856	849	847	841	844	846
10...	875	885	880	877	884	879	891	866
11...	711	705	724	741	770	777	783	786
12...	989	003	009	011	020	037	054	064
13...	180	191	184	188	190	180	171	171
14...	058	062	044	032	013	991	991	979
15...	510	450	383	311	259	235	211	187
16...	251	272	277	277	281	282	286	289
17...	669	684	679	680	691	696	705	707
18...	819	832	836	820	828	822	818	817
19...	666	627	618	592	576	543	516	496
20...	390	394	400	405	408	403	412	404
21...	657	654	662	672	682	698	717	707
22...	647	634	624	622	625	602	600	603
23...	762	779	789	800	805	805	806	804
24...	773	768	762	730	711	706	720	746
25...	123	131	137	138	129	131	134	130
26...	069	067	073	074	070	070	071	079
27...	004	984	968	986	965	952	952	934
28...	714	699	702	696	697	692	688	681
29...	540	536	534	519	473	448	399	341
30...	574	598	611	615	624	630	645	642

Date.	Remarks.
Nov. 11.	Cloudy; rain; fall of water $0^{in}.60$; wind N. W.
“ 12.	Changeable; wind N. W.
“ 13.	Changeable; wind S. E.
“ 14.	Cloudy; rain; fall of water $0^{in}.10$; wind S. E.
“ 15.	Rain; fall of water $1^{in}.25$; wind S. W.
“ 16.	Changeable; brisk wind W.
“ 17.	Cloudy; wind S.
“ 18.	Cloudy; brisk wind S. E.
“ 19.	Rain; fall of water $0^{in}.10$; wind S.
“ 20.	Cloudy; sprinkle of rain; wind W.

TYPO-BAROGRAPH.

NOVEMBER, 1866.

DATE.	16*h*.	17*h*.	18*h*.	19*h*.	20*h*.	21*h*.	22*h*.	23*h*.
1...	789	795	800	811	813	821	816	825
2...	031	043	061	089	120	130	131	133
3...	171	173	181	201	224	235	240	233
4...	407	411	418	428	441	443	446	444
5...	365	367	373	373	377	375	372	365
6...	182	176	169	167	166	151	136	107
7...	914	906	911	916	917	913	913	893
8...	863	881	871	880	889	883	889	881
9...	854	863	861	869	879	875	887	861
10...	858	860	860	853	847	832	848	837
11...	802	817	831	856	877	887	888	888
12...	077	096	113	134	164	166	176	178
13...	172	169	166	186	202	198	197	186
14...	985	976	958	956	941	912	890	855
15...	163	139	115	091	067	042	017	052
16...	309	329	353	380	413	448	474	483
17...	709	712	723	744	761	766	764	749
18...	812	812	826	825	812	812	809	782
19...	463	438	420	402	388	376	373	364
20...	409	415	415	456	481	493	504	503
21...	720	721	714	722	713	727	735	719
22...	581	573	591	600	609	618	627	634
23...	802	808	819	832	849	849	853	831
24...	771	804	833	871	896	927	963	963
25...	127	133	134	135	135	136	136	120
26...	086	080	077	082	083	089	088	071
27...	911	897	900	900	898	899	896	875
28...	673	651	647	643	641	639	651	643
29...	325	326	329	318	348	329	331	312
30...	646	696	735	773	810	830	841	844

DATE.	REMARKS.
Nov. 21.	Cloudy; snow at 23*h*.
" 22.	Cloudy; sprinkle of snow.
" 23.	Cloudy; sprinkle of snow; wind N. W.
" 24.	Cloudy; flurries of snow; wind S. W.
" 25.	Clear; wind S.
" 26.	Clear; wind S.
" 27.	Changeable; rain; fall of water $0^{in}.10$.
" 28.	Sprinkle of rain; strong wind S.
" 29.	Rain; fall of water $0^{in}.90$; strong wind S. W.
" 30.	Cloudy; sprinkle of snow; cold; wind W.

TYPO-BAROGRAPH

December, 1866.

Date.	0*h*.	1*h*.	2*h*.	3*h*.	4*h*.	5*h*.	6*h*.	7*h*.
1...	29.809	797	805	794	818	831	863	883
2...	29.998	988	988	994	009	029	039	064
3...	30.126	111	094	082	073	082	068	067
4...	29.561	486	426	327	336	340	366	442
5...	29.990	995	991	005	024	047	067	081
6...	30.095	068	045	027	007	967	945	926
7...	29.793	792	796	816	819	844	840	835
8...	29.549	477	423	392	392	386	380	370
9...	29.548	542	521	524	527	525	521	521
10...	29.610	608	612	632	664	686	719	738
11...	29.842	827	821	818	821	832	836	844
12...	29.833	830	833	848	846	859	865	869
13...	29.902	878	873	870	871	875	879	877
14...	30.025	050	048	067	087	098	101	118
15...	30.202	190	170	155	175	184	185	192
16...	29.950	900	861	824	785	706	679	625
17...	29.298	309	369	383	424	479	544	587
18...	30.048	031	025	031	037	030	039	033
19...	29.873	848	835	825	811	811	811	818
20...	30.291	298	318	351	380	403	427	457
21...	30.531	510	493	488	477	473	470	462
22...	30.155	119	110	086	068	047	036	005
23...	29.541	502	469	440	426	411	394	368
24...	29.285	281	292	282	327	333	315	353
25...	29.557	545	545	562	602	626	663	686
26...	29.865	858	849	840	834	844	829	819
27...	29.210	166	139	101	062	001	967	929

TYPO-BAROGRAPH.

December, 1866.

Date.	8*h*.	9*h*.	10*h*.	11*h*.	12*h*.	13*h*.	14*h*.	15*h*.
1...	888	902	909	923	925	935	945	948
2...	069	079	082	088	088	088	103	111
3...	057	059	029	025	997	985	983	970
4...	481	533	574	624	666	707	741	771
5...	094	103	111	106	111	113	116	128
6...	903	852	831	833	798	766	764	778
7...	836	844	840	841	830	830	810	792
8...	372	383	391	392	385	389	398	394
9...	513	514	512	508	492	504	509	519
10...	751	752	764	775	774	782	800	815
11...	845	862	871	871	863	849	845	841
12...	871	878	887	886	870	870	886	889
13...	871	864	860	850	844	845	851	867
14...	134	159	181	192	196	192	208	218
15...	180	187	187	173	188	177	155	130
16...	548	515	472	436	332	331	294	251
17...	664	669	711	742	760	789	829	844
18...	033	027	028	007	007	002	996	988
19...	824	817	806	795	785	794	858	915
20...	463	481	488	496	499	501	510	549
21...	446	432	424	414	406	400	358	347
22...	938	958	944	912	870	833	808	756
23...	344	312	287	285	261	228	230	213
24...	371	392	419	432	436	446	469	473
25...	704	707	725	733	744	751	767	789
26...	801	793	787	754	737	700	651	597
27...	897	853	855	850	846	862	897	940
28...	387	399	440	472	481	515	549	578
29...	866	869	889	898	899	899	911	941
30...	182	191	185	187	182	179	185	199
31...	098	084	080	080	067	048	045	045

Date.	Remarks.
Dec. 12.	Changeable; wind N. W.
" 13.	Changeable; cold; wind W.
" 14.	Clear; wind W.
" 15.	Clear.
" 16.	Snow; fall of water $1^{in}.00$; wind N. W.
" 17.	Cloudy; sprinkle of snow; wind N. W.
" 18.	Cloudy; wind S.
" 19.	Sprinkle of snow; wind N. W; cold.
" 20.	Clear and cold; thermometer at 18*h*. —10.0°; wind N.
" 21.	Changeable; wind S. E.

TYPO-BAROGRAPH.

DECEMBER, 1866.

DATE.	16h.	17h.	18h.	19h.	20h.	21h.	22h.	23h.
1...	952	967	979	985	992	005	017	010
2...	113	114	124	133	144	129	159	154
3...	929	901	872	850	823	785	717	648
4...	805	835	873	903	935	961	989	991
5...	128	121	126	135	138	140	152	117
6...	775	777	796	813	805	811	825	816
7...	782	786	765	741	703	693	650	607
8...	407	411	467	501	520	546	575	561
9...	526	535	552	585	596	624	634	624
10...	825	831	848	861	867	872	878	867
11...	836	830	831	836	848	862	867	855
12...	885	898	914	924	938	942	932	923
13...	874	888	911	942	975	003	005	010
14...	219	233	247	248	242	241	244	226
15...	114	096	097	080	057	060	040	000
16...	224	208	208	230	260	271	284	292
17...	870	902	910	918	025	049	069	066
18...	965	955	942	930	923	920	921	902
19...	953	985	061	085	162	261	279	288
20...	550	547	547	549	550	550	562	564
21...	330	307	281	273	260	253	231	217
22...	722	694	676	644	637	625	599	588
23...	199	227	241	267	284	307	307	310
24...	474	482	516	545	553	559	575	574
25...	794	803	827	839	858	885	905	890
26...	528	487	465	423	374	348	332	332
27...	989	995	019	029	084	149	187	200
28...	594	607	641	672	702	739	778	787
29...	947	961	979	996	018	036	064	069
30...	192	187	187	198	196	208	206	177
31...	032	028	026	031	032	048	065	067

DATE.	REMARKS.
Dec. 22.	Cloudy; thaw; wind S.
" 23.	Cloudy; rain; fall of water $0^{in}.20$; wind S. E.
" 24.	Cloudy; rain; fall of water $0^{in}.20$.
" 25.	Changeable; snow squall; wind S. E.
" 26.	Snow to 2 P. M. 27th; fall of water $1^{in}.3$.
" 27.	Snow; fall of water $0^{in}.30$; strong wind W.
" 28.	Cloudy; some snow; cold; wind N. W.
" 29.	Cloudy; wind W.
" 30.	Changeable; sprinkle of snow at 23*h.*; wind N. W.
" 31.	Cloudy; sprinkle of snow at 20*h.*; wind N. W.

TYPO-BAROGRAPH.

JANUARY, 1867.

DATE.	0h.	1h.	2h.	3h.	4h.	5h.	6h.	7h.
1...	30.013	998	995	993	993	997	012	020
2...	30.063	044	032	027	020	012	012	009
3...	30.023	014	017	004	982	990	017	018
4...	29.974	934	931	920	923	928	931	950
5...	29.734	696	657	632	608	540	522	498
6...	29.370	366	377	388	399	408	419	428
7...	......	......	......	... ..	......	......	......	......
8...	29.385	376	367	369	371	373	379	393
9...	29.401	380	368	359	349	349	352	352
10...	29.309	293	287	287	287	295	301	316
11...	29.544	538	546	559	589	610	630	660
12...	29.938	941	962	994	016	020	037	051
13...	29.800	790	781	770	754	732	707	681
14...	29.758	749	746	745	743	751	754	755
15...	29.789	778	780	807	816	841	893	920
16...	30.014	991	962	915	893	879	856	838
17...	29.351	380	380	386	407	422	444	461
18...	29.641	617	612	609	614	611	618	640
19...	29.525	509	501	507	517	527	544	564
20...	29.765	759	770	769	767	756	752	742
21...	29.281	268	268	274	284	298	308	316
22...	29.523	516	508	520	533	549	568	574
23...	29.664	641	654	670	695	720	743	758
24...	29.977	957	965	969	977	993	013	026
25...	29.928	921	881	864	841	823	820	764
26...	29.182	152	144	142	144	147	155	161
27...	29.384	384	394	423	465	501	520	545
28...	29.774	762	763	773	780	787	803	809
29...	29.747	737	737	747	764	793	818	850
30...	30.235	226	220	220	215	218	231	232
31...	30.018	991	967	961	946	939	932	913

DATE.	REMARKS.
Jan. 1.	Sprinkle of snow; changeable; wind N. W.
" 2.	Changeable; cold; wind S.
" 3.	Changeable; wind S. E.
" 4.	Changeable; wind S. E.
" 5.	Snow; fall of water $0^{in}.25$.
" 6.	Changeable; wind W.
" 7.	Changeable; wind W.
" 8.	Changeable; wind W.
" 9.	Cloudy; wind S. E.
" 10.	Cloudy; wind S. E.
" 11.	Changeable; cold; wind W.

TYPO-BAROGRAPH.

JANUARY, 1867.

DATE.	8h.	9h.	10h.	11h.	12h.	13h.	14h.	15h.
1...	032	032	032	032	030	024	029	038
2...	009	009	006	006	003	988	988	002
3...	018	990	993	988	987	973	975	978
4...	936	934	944	937	927	916	912	904
5...	488	453	412	392	360	356	354	351
6...	437	444	451	457	464	476	485	493
7 ..	......	......	......	......	......	......	......	......
8...	395	403	413	415	405	407	412	423
9...	353	346	341	332	325	325	318	321
10...	331	339	349	359	376	374	410	420
11...	690	708	718	723	724	744	770	787
12...	055	092	077	055	027	022	024	032
13...	684	682	649	642	643	646	656	662
14...	750	750	753	752	747	743	743	746
15...	943	955	975	977	979	979	012	025
16...	823	776	747	747	725	675	609	563
17...	459	478	509	534	553	568	586	624
18...	633	618	609	604	600	562	563	570
19...	575	593	594	604	640	636	670	694
20...	723	695	648	627	600	553	491	431
21...	327	340	350	362	371	387	404	421
22...	593	594	592	592	593	594	606	611
23...	775	788	796	804	816	818	825	832
24 ..	039	049	051	048	048	041	034	027
25...	726	693	643	608	562	532	461	410
26...	171	176	180	182	182	182	185	196
27...	572	579	581	599	611	629	661	684
28...	809	806	801	787	774	760	752	752
29...	877	887	906	924	933	944	970	998
30...	238	241	227	212	196	180	165	147
31...	895	865	808	755	689	663	629	561

DATE. REMARKS.

Jan. 12. Changeable; sprinkle of snow; wind N.
" 13. Cloudy; fall of water $0^{in}.05$.
" 14. Changeable; wind N.
" 15. Changeable; cold; wind N. W.
" 16. Changeable; snow; fall of water $0^{in}.21$; brisk wind N.
" 17. Snow; changeable; fall of water $0^{in}.70$; brisk wind W.
" 18. Changeable; cold; wind N. W.
" 19. Changeable; wind S. E.
" 20. Cloudy; snow; fall of water $0^{in}.40$.
" 21. Snow; fall of water $0^{in}.20$; wind N. W.

TYPO-BAROGRAPH.

JANUARY, 1867.

DATE.	16h.	17h.	18h.	19h.	20h.	21h.	22h.	23h.
1...	034	032	032	059	075	078	079	082
2...	002	995	988	014	027	046	052	041
3...	952	939	949	968	977	986	986	981
4...	884	869	866	866	866	849	815	782
5...	331	307	312	319	343	358	365	370
6...	496	489	493	504	526	542	549	542
7...	......	......	......	......	......	......	......	......
8...	429	419	419	418	425	435	423	419
9...	311	286	288	293	298	309	310	313
10...	423	423	436	464	493	523	544	548
11...	802	816	832	858	868	896	920	939
12...	024	022	011	978	961	949	938	868
13...	663	678	683	700	720	738	768	775
14...	743	746	746	746	763	768	783	789
15...	025	021	022	029	063	067	069	051
16...	542	517	480	472	450	415	395	373
17...	639	647	648	668	674	684	706	689
18...	563	554	549	549	549	557	558	552
19...	711	720	746	738	746	767	782	784
20...	429	411	399	384	350	327	302	285
21...	429	447	465	483	504	516	525	528
22...	607	629	643	664	667	672	669	674
23...	844	856	888	909	938	959	982	984
24...	022	022	022	024	019	008	003	986
25...	368	362	347	347	347	289	254	230
26...	216	232	257	282	325	342	376	382
27..	699	706	733	748	763	773	781	783
28...	747	747	747	747	751	753	754	762
29...	023	073	102	143	183	208	225	234
30..	131	123	104	091	083	079	059	047
31...	515	479	466	451	453	436	446	463

DATE.	REMARKS.
Jan. 22.	Cloudy; wind N. W.
" 23.	Changeable; wind N.
" 24.	Changeable; hazy; wind W.
" 25.	Snow; fall of water $0^{in}.40$; wind S.
" 26.	Changeable; wind S. E.
" 27.	Changeable; wind N. W.
" 28.	Changeable; brisk wind from W.
" 29.	Squall of snow; clear and cold.
" 30.	Changeable; sprinkle of snow; wind S. E.
" 31.	Cloudy; sprinkle of rain; wind S.

TYPO-BAROGRAPH.

February, 1867.

Date.	0*h*.	1*h*.	2*h*.	3*h*.	4*h*.	5*h*.	6*h*.	7*h*.
1...	29.470	466	481	508	564	595	625	642
2...	......	......	......	......	......	......	......	......
3...	29.124	122	134	140	151	157	189	199
4...	29.680	666	650	648	636	632	629	647
5...	29.377	386	391	414	446	494	538	572
6...	29.898	880	873	873	893	928	957	001
7...	30.257	233	218	213	213	211	206	187
8...	30.080	052	039	028	007	988	982	931
9...	29.403	365	378	376	356	285	299	295
10...	......	......	......	......	......	......	......	......
11...	30.652	624	588	573	551	509	500	491
12...	30.397	378	359	343	333	325	321	312
13...	30.174	121	109	094	087	033	976	993
14...	29.985	981	981	981	986	992	996	022
15...	30.294	257	255	256	256	256	259	267
16...	29.920	882	796	736	709	689	675	655
17...	29.662	674	686	699	712	725	767	785
18...	29.878	875	860	841	822	824	812	801
19...	29.942	929	928	947	951	968	982	010
20...	29.987	951	941	943	954	968	983	010
21...	29.906	883	839	811	800	789	759	742
22...	29.835	817	819	842	860	884	899	930
23...	29.975	920	894	857	820	800	744	743
24...	29.493	509	531	549	587	642	681	727
25...	30.043	009	985	984	985	981	976	988
26...	29.964	948	946	945	960	992	913	029
27...	30.158	139	111	116	124	130	145	162

TYPO-BAROGRAPH.

February, 1867.

Date.	8*h*.	9*h*.	10*h*.	11*h*.	12*h*.	13*h*.	14*h*.	15*h*.
1...	679	707	726	721	729	735	762	740
2...	......	......	......	......	......	......	......	......
3...	210	224	233	236	253	264	274	329
4...	630	618	594	554	526	487	462	453
5...	626	664	682	708	735	750	768	791
6...	018	051	065	094	121	126	130	134
7...	218	219	219	214	209	201	201	179
8...	885	841	795	748	689	652	619	589
9...	259	165	091	035	014	025	089	142
10...	......	......	......	......	......	......	......	......
11...	473	471	467	460	447	411	409	407
12...	320	320	314	308	308	308	286	267
13...	975	949	905	885	880	877	878	879
14...	032	048	070	063	071	089	095	113
15...	264	265	265	263	252	242	211	193
16...	614	599	580	574	574	572	571	575
17...	801	820	832	840	845	853	878	882
18...	760	753	718	685	665	687	714	710
19...	043	045	060	057	047	035	024	005
20...	017	035	033	040	026	024	014	001
21...	738	738	731	722	714	709	728	728
22...	949	982	978	979	986	990	981	988
23...	730	686	624	593	577	560	544	528
24...	763	805	828	837	841	849	882	894
25...	989	988	991	984	972	951	959	959
26...	048	058	060	064	065	065	092	094
27...	182	211	220	221	221	213	206	188
28...	881	883	879	870	863	862	862	862

Date.	Remarks.
Feb. 10.	Changeable; squall of snow; wind S. E.
" 11.	Cloudy; wind S.
" 12.	Cloudy; wind S.
" 13.	Cloudy; rain at 10*h*.; wind N.
" 14.	Cloudy; sprinkle of rain at 5*h*.; wind N.
" 15.	Cloudy; sprinkle of rain at 20*h*.; wind S. E.
" 16.	Cloudy; sprinkle of rain at 5*h*.; wind W.
" 17.	Changeable; wind N.
" 18.	Changeable; wind W.

TYPO-BAROGRAPH.

FEBRUARY, 1867.

DATE.	16h.	17h.	18h.	19h.	20h.	21h.	22h.	23h.
1...	732	752	770	784	804	817	809	773
2...	......	......	......	......	......	......	......	......
3...	372	409	486	523	562	599	638	672
4...	453	453	453	428	403	378	376	376
5...	793	813	830	858	868	890	907	906
6...	156	167	189	224	248	256	283	281
7...	173	171	171	165	165	156	136	116
8...	558	521	482	474	456	437	422	408
9...	171	258	345	432	519	606	631	673
10...	......	......	......	......	......	......	......	......
11...	406	405	404	404	408	414	407	406
12...	254	259	256	251	242	219	213	200
13...	879	900	906	912	950	960	974	992
14...	127	161	192	211	246	271	282	303
15...	175	149	122	119	082	074	006	986
16...	575	574	583	599	612	618	632	650
17...	890	895	885	901	914	911	906	891
18...	743	773	810	844	877	911	917	942
19...	984	991	987	993	012	994	991	996
20...	997	993	984	980	983	983	951	931
21...	737	751	762	784	804	827	836	838
22...	045	047	055	054	049	042	022	992
23...	512	496	480	464	447	430	413	463
24...	904	940	953	985	994	034	036	047
25...	961	966	955	953	963	972	983	974
26...	108	130	132	142	152	173	170	158
27...	188	188	188	169	169	137	101	064

TYPO-BAROGRAPH.

March, 1867.

Date.	0*h*.	1*h*.	2*h*.	3*h*.	4*h*.	5*h*.	6*h*.	7*h*.
1...	29.759	741	761	651	629	619	578	560
2...	29.196	206	227	270	354	436	498	536
3...	30.014	982	979	978	972	958	944	951
4...	29.690	697	670	700	730	760	790	813
5...	30.093	087	082	083	085	113	125	150
6...	30.356	329	316	297	257	266	271	262
7...	29.867	847	831	832	838	850	890	913
8...	30.305	296	274	275	271	263	274	283
9...	30.186	175	175	175	139	141	137	146
10...	30.027	984	953	923	907	888	858	840
11...	29.786	779	803	802	837	849	863	882
12...	29.721	701	696	690	681	686	696	704
13...	29.726	706	690	687	676	684	668	636
14...	29.897	889	910	936	946	967	981	017
15...	30.261	211	202	190	172	177	185	193
16...	30.128	098	060	051	043	011	994	968
17...	29.460	460	448	430	422	410	417	419
18...	29.731	759	765	768	764	764	807	825
19...	30.000	999	009	019	028	038	047	056
20...	30.272	256	242	239	237	237	244	251
21...	30.210	174	133	121	109	092	078	048
22...	29.957	962	954	953	953	967	987	013
23...	30.129	117	109	109	114	119	127	144
24...	30.005	074	045	035	018	010	002	976
25...	29.867	868	868	873	881	890	902	921
26...	29.980	968	956	944	932	920	908	896
27...	29.630	616	600	586	571	562	558	558
28...	29.406	389	389	389	385	385	385	385
29...	29.416	399	389	378	358	345	337	337
30...	29.359	345	345	341	341	341	341	346
31...	29.473	463	456	456	454	453	434	460

Date. **REMARKS.**

March 1. Cloudy; sprinkle of rain at 7*h.;* wind W.
" 2. Cloudy; wind W.
" 3. Cloudy; snow at 6*h.;* fall of water 0in.33.
" 4. Changeable; wind N.
" 5. Changeable; wind N.
" 6. Cloudy; snow and hail at 14*h.*
" 7. Snow; changeable; fall of water 0in.33.
" 8. Changeable; wind S. E.
" 9. Cloudy; sprinkle of rain at 8*h.*
" 10. Rain; cloudy; fall of water 0in.20; wind W.
" 11. Cloudy; snow at 16*h.;* fall of water 0in.33.

TYPO-BAROGRAPH.

MARCH, 1867.

DATE.	8*h*.	9*h*.	10*h*.	11*h*.	12*h*.	13*h*.	14*h*.	15*h*.
1...	511	525	456	404	363	332	267	230
2...	552	601	634	656	687	743	783	814
3...	937	913	882	867	862	843	795	778
4...	836	856	878	885	893	956	966	964
5...	169	194	197	201	226	237	268	269
6...	241	237	229	208	182	159	115	095
7...	929	963	988	010	027	055	090	112
8...	281	281	276	269	264	263	250	241
9...	162	165	174	157	154	142	128	120
10...	807	759	743	712	686	692	682	656
11...	887	916	911	897	898	907	890	867
12...	706	716	734	734	735	740	745	747
13...	694	611	611	596	629	648	677	715
14...	026	039	056	065	081	113	134	161
15...	202	212	219	225	231	243	220	228
16...	937	900	858	824	755	713	665	621
17...	428	428	430	451	479	502	524	553
18...	843	833	849	859	873	889	889	904
19...	065	075	141	172	179	181	183	195
20...	256	257	258	250	243	248	247	234
21...	044	035	022	012	996	992	966	953
22...	050	066	077	086	090	091	084	084
23...	150	156	165	163	157	157	159	143
24...	962	938	959	945	919	897	871	844
25...	940	961	969	969	972	991	979	979
26...	884	870	855	827	816	816	774	759
27...	548	536	530	512	492	479	452	431
28...	406	421	428	432	432	431	431	430
29...	337	341	345	345	345	345	345	345
30...	356	365	365	365	365	365	365	365
31...	539	545	537	537	507	487	462	452

DATE.	REMARKS.
March 12.	Snow; sprinkle of rain; wind S. E.
" 13.	Cloudy; wind W.
" 14.	Changeable; wind N. W.
" 15.	Changeable; wind N. W.
" 16.	Snow; wind N.
" 17.	Snow; fall of water from 16*h*. $0^{\text{in}}.50$.
" 18.	Changeable; wind N. W.
" 19.	Clear.
" 20.	Cloudy; wind N. W.
" 21.	Changeable; wind N.

TYPO-BAROGRAPH.

MARCH, 1867.

DATE.	16*h*.	17*h*.	18*h*.	19*h*.	20*h*.	21*h*.	22*h*.	23*h*.
1...	209	199	187	175	163	169	176	219
2...	852	915	955	982	988	000	015	024
3...	736	736	736	712	714	698	691	700
4...	982	012	032	048	075	093	089	089
5...	277	293	303	327	340	353	354	355
6...	074	049	015	980	939	929	918	886
7...	149	170	210	235	278	298	303	304
8...	230	225	236	242	247	244	236	211
9...	112	114	119	112	113	103	068	040
10...	661	674	681	704	734	762	775	789
11...	869	851	837	831	816	811	774	757
12...	742	750	766	762	759	764	759	744
13...	764	777	797	814	847	854	884	897
14...	170	195	213	238	266	266	269	269
15...	227	227	236	243	244	226	191	157
16...	579	572	538	532	524	495	472	473
17...	582	603	620	639	676	709	725	733
18...	912	943	977	007	019	017	017	005
19...	200	205	223	235	257	265	275	276
20...	232	230	228	226	224	222	220	213
21...	937	933	923	937	940	944	957	957
22...	084	090	101	115	121	133	133	131
23...	139	139	139	144	130	130	129	119
24...	849	845	837	849	854	857	859	860
25...	989	993	987	993	007	012	009	007
26...	734	734	732	707	686	672	658	644
27...	425	417	417	417	417	417	417	413
28...	429	429	428	427	427	426	426	424
29...	345	345	348	357	365	365	365	365
30...	371	382	390	412	433	449	462	473
31...	415	391	360	365	365	355	334	304

DATE.	REMARKS.
March 22.	Changeable; wind S. E.
" 23.	Changeable; wind S.
" 24.	Rain; fall of water $0^{\text{in}}.20$; wind N. W.
" 25.	Changeable; wind N. W.
" 26.	Changeable; sprinkle of snow; wind N.
" 27.	Cloudy; snow; wind N. W.
" 28.	Clear to 14*h*.; changeable; brisk wind W.
" 29.	Changeable; wind W.
" 30.	Clear; wind W.
" 31.	Clear; at 14*h*. rain; fall of water $0^{\text{in}}.09$.

[illegible]GRAPH.

[illegible]

		[illegible]	[illegible]	4h.	5h.	6h.	7h.
[illegible]	[illegible]	[illegible]	[illegible]	246	256	260	276
[illegible]	[illegible]	[illegible]	[illegible]	495	550	579	579
[illegible]	[illegible]	[illegible]	[illegible]	969	971	983	987
[illegible]	[illegible]	[illegible]	[illegible]	540	521	515	516
[illegible]	[illegible]	[illegible]	[illegible]	266	290	309	319
[illegible]	[illegible]	[illegible]	[illegible]	557	588	658	669
[illegible]	[illegible]	[illegible]	[illegible]	648	683	709	765	794
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	637	656	670	722
[illegible]	[illegible]	[illegible]	[illegible]	974	964	957	943	943
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	582	558	516	458
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	527	551	580	612
[illegible]	[illegible]	[illegible]	[illegible]	604	589	585	586	592
[illegible]	[illegible]	[illegible]	[illegible]	785	806	840	878	926
[illegible]	[illegible]	[illegible]	[illegible]	694	078	059	050	047
[illegible]	[illegible]	[illegible]	[illegible]	725	714	696	673	670
[illegible]	[illegible]	[illegible]	[illegible]	508	483	481	445	415
[illegible]	[illegible]	[illegible]	[illegible]	546	566	591	634	666
[illegible]		......	......	......	......	......	......	......
[illegible]	[illegible]	[illegible]	[illegible]	964	939	928	907	909
[illegible]	[illegible]	[illegible]	[illegible]	642	616	586	571	573
[illegible]	[illegible]	[illegible]	[illegible]	550	546	548	549	594
[illegible]	[illegible]	[illegible]	[illegible]	159	125	125	131	186
[illegible]		......	......	......	......	......	......	......
[illegible]	[illegible]	[illegible]	947	013	002	992	972	970
[illegible]	[illegible]	[illegible]	[illegible]	976	965	965	965	971
[illegible]	[illegible]	[illegible]	[illegible]	853	837	825	821	817
[illegible]	[illegible]	[illegible]	670	692	695	746	787	827

TYPO-BAROGRAPH.

APRIL, 1867.

DATE.	8*h*.	9*h*.	10*h*.	11*h*.	12*h*.	13*h*.	14*h*.	15*h*.
1...	293	305	309	311	313	315	316	317
2...	618	648	675	702	729	756	784	811
3...	998	003	013	002	992	985	978	957
4...	538	528	533	533	524	520	494	465
5...	332	319	316	314	313	290	277	277
6...	702	720	732	747	755	755	743	733
7...	836	860	884	902	904	906	908	910
8...	750	815	820	853	858	888	888	914
9...	943	936	927	913	869	852	864	848
10...	447	426	392	377	361	316	324	324
11...	650	678	683	688	703	704	688	679
12...	602	612	620	622	624	631	631	631
13...	966	010	040	061	084	089	095	105
14...	047	052	051	056	033	006	004	998
15...	667	663	659	655	651	647	631	618
16...	398	403	403	396	383	383	376	372
17...	680	691	691	684	681	681	681	684
18...	......	......	......	......	......	......	......	......
19...	910	912	900	895	890	873	857	848
20...	544	534	533	532	531	530	529	528
21...	600	589	588	583	583	582	567	563
22...	240	325	365	450	498	500	534	575
23...	......	......	......	......	......	......	......	......
24...	970	979	973	969	967	957	951	948
25...	978	993	993	994	994	991	991	991
26...	813	809	805	801	797	792	770	750
27...	850	863	870	873	884	912	922	946
28...	......	......	......	......	......	......	......	......
29...	038	024	015	005	998	962	951	940
30...	709	709	685	664	642	615	556	520

DATE.	REMARKS.
April 11.	Clear; wind S. E.
" 12.	Changeable; wind N. W.
" 13.	Changeable; wind N.; changed to S. at noon.
" 14.	Cloudy; wind S.
" 15.	Cloudy; rain; wind S.
" 16.	Rain; fall of rain from 15th, 0^{in}.75.
" 17.	Sprinkle of rain; changeable.
" 18.	Clear; wind N.
" 19.	Changeable; wind S.
" 20.	Cloudy; heavy shower, with thunder and lightning; wind S.

TYPO-BAROGRAPH.

April, 1867.

Date.	16*h*.	17*h*.	18*h*.	19*h*.	20*h*.	21*h*.	22*h*.	23*h*.
1...	319	321	344	363	372	401	417	421
2...	838	865	892	918	942	958	981	991
3...	949	932	924	905	872	848	818	773
4...	452	446	446	441	414	363	349	293
5...	277	285	305	360	400	419	449	449
6...	725	725	742	742	742	761	703	694
7...	911	913	914	909	908	889	865	838
8...	944	962	962	995	022	040	038	038
9...	842	827	823	811	799	778	762	732
10...	333	357	403	410	429	446	452	468
11...	682	689	695	708	710	711	711	683
12...	641	643	680	713	746	761	767	772
13...	121	126	153	159	159	198	203	194
14...	981	965	965	948	924	903	880	858
15...	610	597	590	596	594	586	583	571
16...	372	372	392	418	437	457	488	513
17...	695	718	762	796	804	815	829	845
18...	......	......	......	......	......	......	.. ..	......
19...	838	817	804	791	773	767	738	733
20...	527	526	524	522	520	517	517	516
21...	552	533	515	476	425	408	350	307
22...	611	649	677	699	705	730	759	785
23...	......	......	......	......	......	......	......	......
24...	944	964	981	001	012	015	014	025
25...	989	991	999	002	999	992	985	956
26...	712	706	695	670	642	613	608	610
27...	981	002	015	024	025	033	052	053
28...	......	......	......	......	......	......	......	......
29...	930	918	914	908	897	886	863	849
30...	486	452	417	405	371	335	296	270

Date. **REMARKS.**

April 21. Changeable; rain; fall of water from 0*h*. $0^{in}.62$; wind S. E.
" 22. Shower of rain; fall of water $0^{in}.02$
" 23. Cloudy; wind S. E.
" 24. Cloudy; wind N. W.
" 25. Changeable; wind S. E.
" 26. Changeable; sprinkle of rain; brisk wind S.
" 27. Rain; clear at 12*h*.; fall of water $0^{in}.80$.
" 28. Clear; sprinkle of rain at 22*h*.; wind S. E.
" 29. Changeable; rain.
" 30. Rain; fall of water from 29th, $1^{in}.10$.

TYPO-BAROGRAPH.

May, 1867.

Date.	0*h.*	1*h.*	2*h.*	3*h.*	4*h.*	5*h.*	6*h.*	7*h.*
1...	......	......	......	......	......	......	......	......
2...	29.787	786	812	833	856	881	909	957
3...	30.243	235	227	215	211	210	204	205
4...	30.231	200	177	147	124	121	096	097
5...	29.951	934	923	862	830	829	826	831
6...	29.716	716	695	667	651	647	643	651
7...	29.627	626	625	615	605	595	593	585
8...	29.051	026	998	989	986	004	024	040
9...	29.167	189	208	225	262	284	308	341
10...	29.493	481	492	503	514	525	536	548
11...	29.641	637	635	636	636	631	641	668
12...	......	......	......	......	......	......	......	......
13...	29.826	775	723	671	655	636	619	618
14...	29.309	307	303	287	305	329	336	350
15...	......	......	......	......	......	......	......	......
16...	29.530	556	561	561	570	590	601	615
17...	29.646	636	633	626	618	632	632	644
18...	29.772	762	762	763	779	773	790	801
19...	29.870	854	856	829	810	804	815	817
20...	29.713	704	702	695	689	694	691	694
21...	29.621	597	564	544	523	511	490	496
22...	29.373	385	379	367	372	372	371	378
23...	29.384	408	407	407	411	431	452	478
24...	29.712	739	754	752	745	743	744	769
25...	29.835	849	829	821	811	783	776	780
26...	29.635	643	649	650	669	671	672	678
27...	29.848	880	873	858	852	853	839	839
28...	29.881	807	830	770	747	731	728	712
29...	......	......	......	......	......	......	......	......
30...	29.749	691	683	668	672	675	676	680
31...	29.741	731	740	745	746	746	757	778

Date.	Remarks.
May 1.	Rain; changeable; fall of water $0^{in}.20$; wind W.
" 2.	Changeable to 8*h.;* clear and cold; ice ¼ in. thick; wind N.
" 3.	Clear; frost; ice ¼ in. thick; wind S.
" 4.	Cloudy; sprinkle of rain; wind S.
" 5.	Changeable; shower of rain; wind S.
" 6.	Rain; fall of water from 5*th.* $0^{in}.80$.
" 7.	Rain; fall of water $1^{in}.20$.
" 8.	Showers of rain; fall of water $0^{in}.10$; wind W.
" 9.	Changeable; wind W.
" 10.	Changeable; frost; wind W.
" 11.	Changeable; wind W.

[illegible]PH.

[illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	13A.	14A.	15A.
[illegible]								
						......	......	......
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	109	116	137
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	241	241	245
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	114	109	071	065
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	832	831	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	667	659	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	511	465	437
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	098	091	091
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	425	427	431
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	581	583	589
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	726	727	729
[illegible]						......	......	......
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	481	446	434	422
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	347	331	328	324
[illegible]						......	......	......
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	634	650	641	644
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	692	685	689	691
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	856	851	851	851
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	824	810	805	791
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	765	700	700	700
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	464	454	443	424
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	365	361	364	365
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	539	570	580	588
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	845	846	853	857
[illegible]	[illegible]	[illegible]	[illegible]	744	719	698	686	678
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	746	754	764	766
[illegible]	[illegible]	[illegible]	[illegible]	875	883	886	886	882

TYPO-BAROGRAPH.

MAY, 1867.

DATE.	16*h*.	17*h*.	18*h*.	19*h*.	20*h*.	21*h*.	22*h*.	23*h*.
1...	......	......	......	......	......	......	......	......
2...	158	174	201	217	237	254	254	255
3...	246	255	275	288	294	294	292	260
4...	048	051	055	038	006	996	982	973
5...	828	809	809	816	813	798	774	748
6...	646	650	657	654	652	656	649	633
7...	412	371	345	289	252	203	175	106
8...	087	095	107	121	132	137	158	162
9...	452	465	475	485	486	486	485	492
10...	597	619	639	644	651	660	662	658
11...	747	766	797	802	801	797	797	785
12...	......	......	......	......	......	......	......	......
13...	410	399	387	376	365	354	344	336
14...	324	332	340	334	332	326	308	311
15...	......	......	......	......	......	......	......	......
16...	644	646	655	658	659	654	655	654
17...	692	706	713	718	721	722	764	764
18...	858	871	890	899	900	883	881	877
19...	770	770	769	757	754	754	751	732
20...	692	695	698	690	684	671	652	633
21...	405	406	424	409	390	393	400	393
22...	366	374	391	403	404	402	404	405
23...	600	629	650	660	676	683	698	711
24...	864	877	893	897	901	895	884	864
25...	679	679	673	654	649	635	617	624
26...	785	800	837	859	856	858	865	858
27...	893	907	917	920	916	913	906	892
28...	662	677	688	672	675	683	679	675
29...	......	......	......	......	......	......	......	......
30...	665	674	686	706	738	741	745	747
31...	907	935	954	974	976	968	966	957

DATE. **REMARKS.**

May 22. Showers of rain; changeable; fall of water $0^{in}.48$.
" 23. Shower of rain; cloudy; fall of water $0^{in}.03$.
" 24. Clear; wind S. E.
" 25. Changeable; rain at 21*h*.
" 26. Rain; clear; fall of water from 25*th*. $1^{in}.50$.
" 27. Changeable; wind N.
" 28. Changeable; rain at 8*h*.; fall of water $0^{in}.10$.
" 29. Showery; fall of water $0^{in}.10$; wind W.
" 30. Changeable; wind W.
" 31. Clear; wind S.

TYPO-BAROGRAPH.

JUNE, 1867.

DATE.	0*h*.	1*h*.	2*h*.	3*h*.	4*h*.	5*h*.	6*h*.	7*h*.
1...	29.932	913	897	880	863	859	851	844
2...	29.771	738	732	719	691	665	652	646
3...	29.384	380	355	310	344	333	366	394
4...	29.579	559	568	569	571	568	586	605
5...	29.779	776	784	788	782	787	792	798
6...	29.773	755	746	720	713	708	708	707
7...	29.725	717	700	704	695	745	737	760
8...	29.888	899	898	900	901	903	913	916
9...	29.893	878	864	856	850	850	864	880
10...	......	......	......	......	......	......	......	......
11...	30.074	033	015	003	996	976	970	969
12...	29.820	821	798	789	786	789	797	794
13...	29.791	793	782	782	781	773	782	800
14...	29.930	900	872	856	852	838	835	835
15...	.. ...	......	......	......	......	......	......	......
16...	29.776	778	803	779	780	800	800	815
17...	29.930	906	892	892	878	870	857	851
18...	29.728	694	678	725	753	751	774	780
19...	29.956	952	945	926	917	915	914	925
20...	30.031	013	000	993	985	985	996	011
21...	30.029	009	992	972	962	956	958	961
22...	29.998	989	976	972	964	961	961	961
23...	29.931	903	879	861	830	821	820	821
24...	29.762	757	740	727	717	710	702	702
25...	29.783	784	787	794	795	807	836	844
26...	29.917	905	904	899	895	900	902	907
27...	29.816	809	797	783	765	753	753	754
28...	29.776	791	790	798	802	805	818	832
29...	29.921	899	886	866	846	837	828	821
30...	29.598	553	520	492	470	457	455	462

DATE. REMARKS.

June 1. Cloudy; wind S.
" 2. Rain; changeable; fall of water $0^{\text{in}}.30$; wind S.
" 3. Cloudy; shower of rain; fall of water $0^{\text{in}}.20$.
" 4. Changeable; wind N. W.
" 5. Changeable; wind S.
" 6. Clear; wind S. E.
" 7. Shower of rain; fall of water $1^{\text{in}}.00$; wind N.
" 8. Changeable; wind W.
" 9. Clear; wind S. W.
" 10. Changeable; wind S.

TYPO-BAROGRAPH.

JUNE, 1867.

DATE.	8*h*.	9*h*.	10*h*.	11*h*.	12*h*.	13*h*.	14*h*.	15*h*.
1...	838	838	844	848	849	849	843	842
2...	618	611	602	587	566	536	516	486
3...	399	419	421	422	428	429	430	430
4...	627	652	671	678	681	685	688	693
5...	804	810	816	819	822	826	834	829
6...	708	712	710	710	703	710	710	711
7...	787	806	804	806	806	810	813	813
8...	927	942	935	927	917	909	893	889
9...	898	922	944	947	947	951	953	956
10...	......	......	......	......	......	.....	......	......
11...	965	965	966	964	962	960	959	958
12...	794	794	797	796	793	793	791	787
13...	826	840	852	856	860	873	877	876
14...	843	867	865	871	878	871	869	859
15...	......	......	......	......	......	......	......	......
16...	839	852	872	882	883	876	882	890
17...	851	860	861	853	844	841	833	820
18...	788	793	794	810	838	849	860	864
19...	941	958	965	975	976	977	978	987
20...	021	035	041	025	030	039	039	038
21...	966	987	989	988	991	992	991	990
22...	968	971	978	981	982	982	982	976
23...	825	826	827	824	823	819	812	812
24...	706	722	725	735	733	730	731	736
25...	861	872	872	873	874	877	881	893
26...	907	912	913	914	907	899	886	882
27...	749	749	748	746	741	736	724	721
28...	846	869	873	883	898	898	912	918
29...	816	816	816	808	798	781	773	773
30...	468	482	490	488	487	488	493	501

DATE.	REMARKS.
June 11.	Clear; wind S.
" 12.	Rain; changeable; fall of water $0^{in}.13$; wind W.
" 13.	Clear; changeable; wind S. E.
" 14.	Clear; wind S. E.
" 15.	Rain.
" 16.	Shower of rain; cloudy; fall of water from 15th, $1^{in}.70$.
" 17.	Shower of rain at 3 P. M.; fall of water $0^{in}.20$.
" 18.	Shower of rain; fall of water $1^{in}.10$; wind N. W.
" 19.	Clear; hazy; wind S. E.
" 20.	Changeable; wind S. E.

TYPO-BAROGRAPH.

July, 1867.

Date.	0*h*.	1*h*.	2*h*.	3*h*.	4*h*.	5*h*.	6*h*.	7*h*.
1...	......	......	......	......	......	......	......	......
2...	29.744	733	722	717	712	704	697	692
3...	29.705	698	687	674	664	654	648	642
4...	......	......	......	......	......	.....	......	......
5...	29.772	762	752	743	747	744	745	746
6...	29.646	606	564	551	516	512	512	513
7...	29.641	636	649	649	639	639	642	650
8...	......	......	......	......	......	......	......	......
9...	29.755	771	756	737	723	719	713	774
10...	29.933	899	895	883	871	871	864	863
11...	29.761	768	742	718	701	691	679	676
12...	29.677	677	677	674	674	667	678	695
13...	29.953	960	962	962	962	964	964	983
14...	30.136	128	113	106	103	094	088	088
15...	30.012	997	981	960	935	916	906	898
16...	29.822	822	821	802	786	778	778	785
17...	29.888	872	872	866	864	854	854	854
18...	29.884	864	868	871	871	872	875	884
19...	29.841	813	803	788	797	804	804	804
20...	29.743	725	708	696	693	685	676	668
21...	......	......	......	......	......	.....	......	......
22...	......	......	......	......	......	......	.....	......
23...	29.735	731	727	721	716	716	726	726
24...	29.695	683	657	638	624	617	617	615
25...	29.599	614	622	618	613	610	604	604
26...	29.616	607	604	602	602	602	610	633
27...	29.792	779	769	766	759	754	752	754
28...	29.650	632	606	589	567	551	546	544
29...	29.561	575	585	599	621	638	663	676
30...	29.897	887	881	875	876	876	900	915
31...	30.040	009	003	992	980	968	968	969

Date. REMARKS.

July 1. Changeable; wind E.
" 2. Clear; wind S.
" 3. Clear; wind S.
" 4. Showers of rain; fall of water $0^{in}.60$; wind N.
" 5. Rain; fall of water $0^{in}.20$; wind S.
" 6. Rain; changeable; fall of water $0^{in}.80$; wind W.
" 7. Changeable; wind W.
" 8. Cloudy; wind S. E.
" 9. Rain; fall of water $2^{in}.00$; wind N. W.
" 10. Changeable; wind S. E.
" 11. Cloudy; rain; fall of water $0^{in}.45$; wind W.

[illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	14h.	15h.
[illegible]							......	......
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	720	715
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	640	633
[illegible]							......	......
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	715	709	708
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	562	577
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	735	751
[illegible]							......	......
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	832	833
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	861	860
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	681	668
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	803	815
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	083	087
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	078	077
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	857	835
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	835	842
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	911	910	908
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	878	873
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	789	781
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	532	526
[illegible]							......	......
[illegible]							......	......
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	748	743	743
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	601	600	600
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	604	601	585
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	727	744	745
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	754	747	746

TYPO-BAROGRAPH.

JULY, 1867.

DATE.	16*h*.	17*h*.	18*h*.	19*h*.	20*h*.	21*h*.	22*h*.	23*h*.
1...	......	......	......	......	......	......	......	......
2...	725	729	743	746	736	718	716	710
3...	628	626	626	626	625	617	604	594
4...	......	......	......	......	......	......	......	......
5...	705	699	693	697	693	674	674	672
6...	586	598	631	642	655	657	655	656
7...	771	791	806	830	831	845	843	841
8...	......	......	......	......	......	......	......	......
9...	850	853	893	923	935	949	958	949
10...	860	849	848	836	827	808	794	782
11...	652	648	648	647	661	677	678	680
12...	846	872	893	918	927	937	944	952
13...	099	118	208	210	196	181	167	152
14...	075	073	073	073	073	066	052	029
15...	834	833	833	827	827	823	823	822
16...	860	876	892	900	904	906	902	894
17...	913	911	910	925	910	910	903	890
18...	871	871	871	871	871	871	861	854
19...	779	773	777	776	776	775	771	748
20...	528	531	534	537	540	543	546	547
21...	......	......	......	......	......	......	......	......
22...	......	......	......	......	......	......	......	......
23...	748	748	748	757	754	749	729	718
24...	600	611	613	626	626	626	623	615
25...	585	585	585	585	585	612	621	628
26...	750	766	787	805	807	807	809	812
27...	745	745	746	743	735	731	708	677
28...	564	584	587	591	589	587	589	577
29...	814	831	859	881	898	901	905	905
30...	043	054	066	090	096	091	075	055
31...	946	951	960	960	960	954	939	922

DATE. **REMARKS.**

July 23. Clear.
" 24. Clear; very warm.
" 25. Very warm; showers of rain; fall of water $1^{in}.13$; wind N. W.
" 26. Changeable; wind S. E.
" 27. Cloudy; wind S.
" 28. Changeable; shower to the north; wind S., changed to W. at 23*h*.
" 29. Changeable; wind W.
" 30. Changeable; wind S.
" 31. Changeable; wind S.

TYPO-BAROGRAPH.

AUGUST, 1867.

DATE.	0*h*.	1*h*.	2*h*.	3*h*.	4*h*.	5*h*.	6*h*.	7*h*.
1...	29.892	878	859	838	821	816	808	805
2...	......	......	......	......	......	......	......	......
3...	29.810	803	805	805	805	805	808	824
4...	29.995	995	979	971	958	954	951	951
5...	29.982	975	961	956	954	943	940	940
6...	29.974	965	961	946	938	929	929	939
7...	29.963	953	939	923	907	898	898	903
8...	29.937	917	902	882	864	854	854	867
9...	29.899	893	881	860	858	847	847	847
10...	29.819	814	814	808	808	808	808	826
11...	29.967	934	917	904	885	881	877	886
12...	29.840	818	801	779	751	738	727	721
13...	29.578	589	577	575	567	556	569	569
14...	29.720	723	723	723	719	719	722	730
15...	29.892	880	880	869	869	867	867	867
16...	29.652	641	594	563	557	546	542	537
17...	29.478	469	466	465	465	470	479	495
18...	29.604	597	603	590	580	579	586	658
19...	29.712	704	714	714	715	713	720	726
20...	29.837	836	836	836	836	798	793	782
21...	29.797	806	791	779	769	751	741	742
22...	29.775	772	773	774	770	770	766	761
23...	29.674	667	657	640	635	627	620	619
24...	29.615	603	597	617	617	623	626	639
25...	29.896	896	889	880	869	874	884	890
26...	29.977	950	930	921	915	904	901	901
27...	29.884	857	833	808	797	791	779	779
28...	29.626	611	595	575	566	566	553	560
29...	29.641	632	622	621	616	616	614	629
30...	29.812	825	819	836	862	883	899	925
31...	30.003	985	959	926	897	883	866	860

DATE.	REMARKS.
Aug. 1.	Cloudy; rain; fall of water $1^{in}.70$; wind S.
" 2.	Cloudy; rain; fall of water $0^{in}.40$; wind N.
" 3.	Shower of rain; clear; fall of water $0^{in}.20$; wind W.
" 4.	Clear; wind W.
" 5.	Clear; changeable at 18*h*.; wind S.
" 6.	Changeable; wind S.
" 7.	Changeable; wind S.
" 8.	Changeable; wind S.
" 9.	Changeable; heavy shower about 21*h*., with much thunder and lightning; wind W.
" 10.	Clear; wind N.

TYPO-BAROGRAPH.

August, 1867.

Date.	8h.	9h.	10h.	11h.	12h.	13h.	14h.	15h.
1...	798	803	803	803	773	754	740	732
2...	......	......	......	......	......	......	......	......
3...	844	864	877	890	900	914	923	934
4...	957	963	963	964	966	966	966	972
5...	948	951	953	953	954	955	956	957
6...	950	957	962	964	967	967	964	964
7 ..	911	922	926	927	931	931	931	931
8...	874	892	892	893	897	892	890	892
9...	851	864	864	864	852	844	841	839
10...	845	877	878	884	889	895	896	899
11...	898	902	903	904	911	909	904	904
12...	711	711	707	694	690	680	676	676
13...	600	617	618	619	620	626	619	621
14...	758	788	802	804	817	819	820	820
15...	867	867	867	865	859	844	831	824
16...	542	547	541	529	515	508	505	491
17...	511	541	555	558	572	581	580	572
18...	615	709	706	677	703	730	689	689
19...	731	740	765	783	800	808	807	816
20...	782	783	807	800	805	808	808	791
21...	751	756	756	772	773	769	769	766
22...	762	767	767	760	756	750	730	725
23...	639	646	646	642	642	634	626	636
24 ..	677	686	696	705	714	717	725	740
25...	896	907	924	931	933	936	937	939
26...	921	924	932	923	921	919	919	917
27...	793	793	793	791	784	769	760	751
28...	569	570	569	565	563	558	553	556
29...	651	662	657	657	661	668	687	700
30...	961	968	003	019	021	031	032	032
31...	863	866	853	840	826	808	783	770

Date. REMARKS.

Aug. 11. Clear; wind S.
" 12. Changeable; brisk wind S.
" 13. Cloudy; showery; fall of water $1^{in}.00$.
" 14. Showers of rain; fall of water $0^{in}.70$; wind N.
" 15. Rain; fall of water $2^{in}.10$; wind N. E.
" 16. Rain; cloudy; fall of water $0^{in}.50$; wind N. W.
" 17. Rain; changeable; wind S.
" 18. Thunder showers; changeable; fall of water $0^{in}.30$; wind S. E.
" 19. Changeable.
" 20. Changeable; wind S. E.

[illegible]

[illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	231.
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	708
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	004
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	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	943
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	908
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	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	976
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	870
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	596
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	719
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	893
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	676
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	496
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	618
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	702
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	838
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	807
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	779
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	684
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	621
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	895
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	993
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	901
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	658

TYPO-BAROGRAPH.

September, 1867.

Date.	0*h*.	1*h*.	2*h*.	3*h*.	4*h*.	5*h*.	6*h*.	7*h*.
1...	29.654	640	623	608	599	600	612	620
2...	29.936	935	929	925	925	920	920	927
3...	29.940	897	887	880	872	860	844	858
4...	29.855	850	843	832	825	831	831	847
5...	29.868	847	835	818	822	822	821	829
6...	29.794	777	775	733	725	724	727	742
7...	30.040	042	041	043	043	048	066	088
8...	30.222	174	161	150	131	129	122	118
9...	29.939	920	879	852	828	818	809	810
10...	29.750	751	742	743	743	744	774	803
11...	29.983	966	952	931	922	916	911	912
12...	29.843	828	805	790	778	772	769	771
13...	29.619	575	556	545	539	541	549	598
14...	30.051	059	055	047	060	074	098	122
15...	30.250	231	209	195	184	176	169	165
16...	30.085	071	065	034	015	007	001	013
17...	......	......	......	......	......	......	......	......
18...	30.016	995	969	947	926	922	922	918
19...	29.973	955	947	947	947	947	947	953
20...	29.839	830	796	768	739	732	727	751
21...	29.996	977	965	949	942	940	940	944
22...	29.903	863	853	837	819	817	815	812
23...	30.201	185	185	182	180	180	190	208
24...	30.215	185	153	128	105	083	073	063
25...	......	......	......	......	......	......	......	.....
26...	29.910	881	867	858	858	865	871	882
27...	29.860	849	838	814	799	793	793	814
28...	29.809	790	776	753	745	741	741	738
29...	29.551	532	507	491	473	473	472	516
30...	29.775	753	760	763	781	789	813	830

Date. REMARKS.

Sept. 1. Cloudy; wind N. W.
" 2. Changeable; fall of water $0^{in}.20$; wind S.
" 3. Changeable; shower of rain; fall of water $0^{in}.40$; wind N. W.
" 4. Changeable; wind N.
" 5. Changeable; wind S.
" 6. Cloudy; shower of rain; thunder and lightning; fall of water $0^{in}.45$; wind N.
" 7. Changeable; wind N.
" 8. Changeable; wind S.
" 9. Cloudy; sprinkle of rain; wind N. W.
" 10. Cloudy to 8*h.;* clear; wind N. W.

TYPO-BAROGRAPH.

September, 1867.

Date.	8*h*.	9*h*.	10*h*.	11*h*.	12*h*.	13*h*.	14*h*.	15*h*.
1...	650	670	688	702	723	746	771	798
2...	932	935	937	938	938	939	939	939
3...	861	865	858	858	846	835	835	834
4...	858	864	869	863	883	877	876	868
5...	832	832	816	818	829	821	812	812
6...	778	784	793	802	808	820	824	841
7...	120	130	141	155	147	157	155	153
8...	121	121	121	118	111	095	075	051
9...	803	800	790	769	769	757	735	712
10...	834	846	861	876	877	882	886	898
11...	916	913	911	912	910	910	906	889
12...	778	785	793	785	785	789	769	750
13 ..	622	615	653	671	698	731	758	785
14...	144	161	177	186	195	199	212	216
15...	163	171	171	172	167	159	152	144
16...	013	011	009	009	011	014	015	016
17...	......	......	......	......	......	......	......	......
18...	918	918	922	926	930	934	938	942
19...	957	958	958	945	937	936	927	920
20...	790	815	829	846	853	871	896	897
21...	955	966	966	955	946	946	941	938
22...	812	821	821	821	839	892	927	966
23...	200	243	265	268	269	275	275	272
24...	052	039	018	008	985	965	922	892
25...	......	......	......	......	......	......	......	......
26...	896	901	909	895	885	881	881	879
27...	818	824	824	816	830	833	831	830
28...	744	743	743	737	732	717	700	680
29...	556	621	659	672	676	671	683	695
30...	852	858	858	858	860	861	861	861

Date. **REMARKS.**

Sept. 11. Clear; wind S. E.
" 12. Changeable; wind S.
" 13. Shower of rain at *6h.;* clear; fall of water 0^{in}.10; wind N.
" 14. Clear; wind S.
" 15. Clear to *14h.;* cloudy; wind S. E.
" 16. Changeable; wind S.
" 17. Cloudy; wind S.
" 18. Cloudy; shower of rain; fall of water 0^{in}.25; wind N.
" 19. Changeable; wind S.
" 20. Clear; rain; clear; fall of water 0^{in}.10; wind N. W.
" 21. Changeable; clear from *9h.;* wind S.

TYPO-BAROGRAPH.

SEPTEMBER, 1867.

DATE.	16*h*.	17*h*.	18*h*.	19*h*.	20*h*.	21*h*.	22*h*.	23*h*.
1...	818	854	888	898	910	922	925	927
2...	939	939	941	943	953	962	956	945
3...	854	861	867	860	862	870	865	865
4...	866	866	866	899	900	896	893	893
5...	806	805	805	815	813	808	811	800
6...	857	896	937	964	983	008	025	030
7...	155	156	170	198	212	220	221	213
8...	038	041	045	048	045	044	002	967
9...	692	692	693	700	715	718	733	744
10...	923	944	964	984	993	993	987	983
11...	890	890	890	889	891	884	882	852
12...	747	755	744	731	718	695	688	688
13...	840	882	923	940	977	001	029	043
14...	233	244	254	274	283	276	275	272
15...	139	135	140	141	134	127	116	099
16...	020	025	027	027	046	045	042	031
17...	......	......	......	......	......	......	......	......
18...	946	950	955	960	964	974	978	977
19...	918	916	916	916	903	894	879	859
20...	913	945	972	989	005	007	008	007
21...	930	933	940	943	947	947	933	922
22...	007	043	088	131	168	191	203	201
23...	272	272	280	277	293	288	266	246
24...	865	838	810	787	760	743	722	703
25...	......	......	......	......	......	......	......	......
26...	886	897	904	908	911	912	906	895
27...	825	830	837	854	858	853	845	827
28...	672	658	641	638	633	630	612	578
29...	707	719	731	745	759	773	787	786
30...	861	867	868	868	868	868	850	819

DATE.	REMARKS.
Sept. 22.	Changeable to 11*h.;* rain; clear; fall of water $0^{\text{in}}.05$; wind N.
" 23.	Clear; wind S. E.
" 24.	Clear to 10*h.;* cloudy; rain; fall of water $0^{\text{in}}.20$; wind S. E.
" 25.	Rain to 2*h.;* cloudy; fall of water $0^{\text{in}}.05$; wind N. W.
" 26.	Changeable; wind N.
" 27.	Clear; wind S.
" 28.	Clear; wind S.
" 29.	Changeable; high wind and shower of rain from W.; fall of water $0^{\text{in}}.10$.
" 30.	Clear and cold; wind N.

TYPO-BAROGRAPH.

October, 1867.

Date.	0*h*.	1*h*.	2*h*.	3*h*.	4*h*.	5*h*.	6*h*.	7*h*.
1...	22.799	744	713	696	685	683	683	682
2...	29.474	480	462	413	392	392	398	404
3...	29.688	688	706	739	702	720	738	777
4...	30.043	004	995	986	998	011	022	024
5...	......	......	......	......	......	......	......	......
6...	29.920	925	930	941	965	002	016	048
7...	30.189	174	178	171	165	165	181	191
8...	30.196	154	131	107	091	075	067	062
9...	29.840	807	787	759	721	695	664	628
10...	29.477	456	434	423	414	413	418	421
11...	......	......	......	......	......	......	......	......
12...	29.573	568	569	572	564	579	590	599
13...	29.733	720	710	708	708	710	715	736
14...	29.812	788	778	773	766	772	774	788
15...	29.747	739	732	740	743	762	784	812
16...	30.041	019	007	990	989	988	997	997
17...	29.914	896	857	823	794	782	786	785
18...	29.702	693	673	656	652	654	654	677
19...	29.858	851	842	840	826	829	844	863
20...	30.048	038	022	017	011	017	019	029
21...	30.051	994	987	973	962	969	961	972
22...	29.778	721	708	715	749	788	820	846
23...	30.144	091	079	079	094	109	134	153
24...	30.333	285	261	242	237	235	237	243
25...	30.281	237	218	200	184	179	181	184
26...	30.158	132	116	104	096	093	100	102
27...	30.194	178	159	151	151	144	150	159

TYPO-BAROGRAPH.

OCTOBER, 1867.

DATE.	8h.	9h.	10h.	11h.	12h.	13h.	14h.	15h.
1...	682	682	682	682	676	672	657	640
2...	408	410	411	416	419	431	447	468
3...	800	825	839	862	865	883	893	903
4...	004	009	008	001	001	004	991	963
5...	......	......	......	......	......	......	......	......
6...	070	077	079	080	081	097	102	103
7...	202	215	222	233	240	242	246	247
8...	062	062	061	037	031	013	006	996
9...	607	605	591	573	564	543	543	529
10...	419	430	440	447	445	448	449	446
11...	......	......	......	......	......	......	......	......
12...	604	615	620	621	629	641	648	658
13...	750	767	767	768	759	764	765	771
14...	789	804	806	811	814	814	810	812
15...	831	843	831	856	872	900	932	942
16...	999	000	992	991	990	991	987	987
17...	776	761	753	742	739	723	709	702
18...	686	691	709	720	721	723	735	749
19...	881	898	928	922	939	943	959	967
20...	054	066	069	070	068	072	074	072
21...	975	972	972	968	952	943	929	902
22...	867	875	882	894	910	927	941	956
23...	168	170	233	256	259	268	277	286
24...	255	257	261	270	269	270	271	275
25...	184	184	184	179	178	175	172	170
26...	104	112	121	127	141	145	153	156
27...	162	177	179	178	184	193	190	195
28...	080	069	055	037	028	012	004	994
29...	627	607	586	565	575	568	566	571
30...	550	534	525	527	544	525	522	514
31...	713	738	784	784	789	808	823	838

DATE.	REMARKS.
Oct. 12.	Changeable; wind N.
" 13.	Changeable; wind W.
" 14.	Changeable; wind S. E.
" 15.	Sprinkle of rain; changeable; wind S. E.
" 16.	Changeable; wind S. E.
" 17.	Changeable; wind S.
" 18.	Clear; wind S.
" 19.	Clear; hazy; wind S.
" 20.	Changeable; wind S. E.
" 21.	Cloudy; wind S.

TYPO-BAROGRAPH.

OCTOBER, 1867.

DATE.	16h.	17h.	18h.	19h.	20h.	21h.	22h.	23h.
1...	625	625	613	611	604	573	533	515
2...	492	516	540	564	588	613	638	663
3...	914	914	966	985	010	026	041	043
4...	937	905	873	859	803	791	758	756
5...	......	......	......	......	......	......	......	......
6...	115	121	150	160	173	181	186	192
7...	244	244	247	257	261	264	248	222
8...	993	987	982	970	953	930	896	869
9...	519	519	510	505	503	501	488	479
10...	442	448	462	476	508	508	518	519
11...	......	......	......	......	......	.....	......	......
12...	672	685	701	727	739	749	751	743
13...	775	783	791	809	816	817	827	825
14...	805	798	791	784	777	770	763	755
15...	960	988	014	032	058	065	069	060
16...	985	986	988	989	983	972	954	932
17...	702	708	710	718	739	739	722	712
18...	757	772	793	816	838	866	880	873
19...	981	002	019	037	063	070	070	076
20...	073	073	073	076	086	095	083	073
21...	896	890	883	866	871	857	829	808
22...	982	019	042	082	121	130	142	150
23...	295	304	312	320	329	338	346	348
24...	279	295	301	312	328	328	319	309
25...	178	180	183	191	198	200	196	184
26...	170	182	197	217	235	235	224	222
27...	198	198	210	224	246	238	228	198
28...	956	941	934	932	934	920	877	848
29...	572	568	568	569	569	576	570	560
30...	523	534	529	547	564	581	590	590
31...	854	871	885	911	933	924	903	879

DATE. **REMARKS.**

Oct. 22. Rain; fall of water 0^{in}.20; wind N.
" 23. Changeable; wind N. W.
" 24. Clear; hazy; wind S.
" 25. Changeable; foggy at 20*h.;* wind S.
" 26. Clear; foggy at 18*h.;* wind S.
" 27. Clear to 17*h.;* changeable; wind S.
" 28. Hazy; rain at 18*h.;* fall of water 0^{in}.30; wind N. W.
" 29. Rain to 20*h.;* fall of water 1^{in}.30; wind N.
" 30. Sprinkle of rain; cloudy; wind N. W.
" 31. Changeable; wind N.

TYPO-BAROGRAPH.

November, 1867.

Date.	0*h*.	1*h*.	2*h*.	3*h*.	4*h*.	5*h*.	6*h*.	7*h*.
1...	29.806	762	731	698	667	645	623	587
2...	29.276	256	264	305	328	369	409	449
3...	29.695	657	633	597	574	544	544	534
4...	......	......	......	......	......	......	......	......
5...	30.100	076	061	054	036	025	029	040
6...	30.032	033	034	010	031	056	065	083
7...	30.183	156	115	088	080	061	057	049
8...	29.852	825	825	825	825	825	825	825
9...	29.708	719	712	772	765	783	785	798
10...	29.836	825	820	797	819	791	818	806
11...	29.820	746	717	705	683	666	667	639
12...	29.566	429	418	431	428	415	412	406
13...	......	......	......	......	......	......	......	......
14...	......	......	......	......	......	......	......	......
15...	30.029	972	993	011	017	021	025	023
16...	......	......	......	......	......	......	......	......
17...	29.575	507	487	478	456	433	430	449
18...	29.752	763	754	763	779	800	826	840
19...	29.993	991	999	013	022	036	055	064
20...	29.915	889	880	870	856	835	821	829
21...	30.091	081	080	079	094	087	103	114
22...	30.045	060	059	058	058	058	053	053
23...	29.989	978	969	961	958	956	966	981
24...	30.027	023	009	998	995	995	006	018
25...	30.955	932	917	911	905	892	892	882
26...	29.668	689	706	735	783	819	849	872
27...	29.990	978	953	940	933	938	926	918
28...	29.830	786	790	789	800	803	808	807
29...	......	......	......	......	......	......	......	......
30...	29.477	479	531	580	638	695	733	789

Date.		Remarks.
Nov.	1.	Changeable; wind S. E.
"	2.	Clear; from 12*h*. changeable; wind S.
"	3.	Rain; fall of water $0^{in}.20$; wind W.
"	4.	Changeable; wind W.
"	5.	Changeable.
"	6.	Cloudy; wind N. W.
"	7.	Cloudy; wind S. E.
"	8.	Changeable; brisk wind S.
"	9.	Cloudy; wind S. E.
"	10.	Rain; fall of water $0^{in}.10$; wind S.

TYPO-BAROGRAPH.

NOVEMBER, 1867.

DATE.	8*h*.	9*h*.	10*h*.	11*h*.	12*h*.	13*h*.	14*h*.	15*h*.
1...	571	579	546	547	506	504	459	433
2...	489	526	562	582	612	640	656	699
3...	502	479	448	434	390	351	340	326
4...	......	......	......	......	......	......	......	......
5...	031	027	027	027	956	951	965	952
6...	095	106	123	132	152	159	167	179
7...	030	028	031	021	010	995	979	957
8...	794	812	811	806	806	792	776	773
9...	801	805	800	801	801	801	814	817
10...	806	800	787	785	802	817	823	827
11...	630	631	642	650	681	676	665	629
12...	400	397	402	406	417	422	434	441
13...	......	......	......	......	......	......	......	......
14...	......	......	......	......	......	......	......	......
15...	002	995	959	939	903	878	844	796
16...	......	......	......	......	......	......	......	......
17...	451	478	502	527	547	568	589	610
18...	854	869	871	864	864	857	856	856
19...	057	048	043	047	048	054	051	046
20...	836	855	852	858	860	857	860	890
21...	120	116	119	121	114	114	117	115
22...	053	053	053	053	019	016	009	004
23...	988	985	991	992	995	993	002	007
24...	012	008	007	999	996	997	999	994
25...	851	834	829	814	797	790	773	748
26...	879	903	911	921	934	955	967	965
27...	900	892	882	876	875	861	854	849
28...	841	837	841	846	837	821	808	803
29...	......	......	......	......	......	......	......	......
30...	837	864	892	931	939	977	029	054

DATE.	REMARKS.
Nov. 11.	Cloudy; rain and snow; fall of water $0^{in}.40$.
" 12.	Changeable; wind W.
" 13.	Changeable; wind S.
" 14.	Sprinkle of rain; cloudy; wind N.
" 15.	Cloudy; wind S. E.
" 16.	Cloudy; wind N. W.
" 17.	Sprinkle of snow; cold; wind W.
" 18.	Changeable; wind W.
" 19.	Changeable; snow at 22*h*.; wind S.
" 20.	Snow; fall of water $0^{in}.05$; wind N.

TYPO-BAROGRAPH.

NOVEMBER, 1867.

DATE.	16*h*.	17*h*.	18*h*.	19*h*.	20*h*.	21*h*.	22*h*.	23*h*.
1...	419	411	400	387	373	359	345	329
2...	706	745	742	757	782	804	796	746
3...	331	336	343	419	468	545	582	607
4...	......	......	......	......	......	......	......	......
5...	958	957	950	967	014	029	030	041
6...	183	196	199	218	227	226	219	197
7...	948	940	927	928	930	928	905	884
8...	772	775	774	770	760	742	756	733
9...	825	836	842	856	882	880	880	860
10...	837	856	878	898	920	915	897	866
11...	627	630	606	617	609	618	601	599
12...	451	456	456	456	455	456	456	453
13...	......	......	......	......	......	......	......	......
14...	......	......	......	......	......	......	......	......
15...	718	657	628	593	566	551	548	539
16...	......	......	......	......	......	......	......	......
17...	631	652	673	694	715	735	755	767
18...	856	873	907	907	907	907	965	997
19...	036	033	021	018	003	993	984	954
20...	915	950	983	022	056	083	090	089
21...	101	099	102	102	113	106	093	077
22...	001	996	994	999	004	009	013	001
23...	001	013	020	021	035	037	033	052
24...	990	989	989	990	993	991	984	955
25...	735	710	693	693	694	695	691	683
26...	994	008	024	033	032	023	034	017
27...	847	839	836	834	837	850	850	842
28...	800	791	791	793	764	738	738	704
29...	......	......	......	......	......	......	......	......
30...	089	095	119	152	191	203	212	215

DATE.	REMARKS.
Nov. 21.	Changeable; wind S.
" 22.	Cloudy; rain at 11*h*.; fall of water $0^{in}.10$; wind W.
" 23.	Cloudy; wind S.
" 24.	Cloudy; wind S.
" 25.	Cloudy; drizzling rain; fall of water $0^{in}.30$; wind W.
" 26.	Cloudy; wind N. E.
" 27.	Cloudy; rain at 16*h*.; fall of water $0^{in}.20$; wind N.
" 28.	Cloudy; wind S.
" 29.	Cloudy; rain; squalls of snow; fall of water $0^{in}.40$; wind W., very brisk.
" 30.	Changeable; wind W.

TYPO-BAROGRAPH.

December, 1867.

Date.	0*h*.	1*h*.	2*h*.	3*h*.	4*h*.	5*h*.	6*h*.	7*h*.
1...	30.199	178	158	139	128	149	166	160
2...	29.873	842	815	812	810	820	830	826
3...	29.786	765	734	720	701	670	641	606
4...	29.687	667	647	628	626	626	618	622
5...	29.566	572	576	601	625	649	666	678
6...	29.651	563	511	458	406	353	314	284
7...	29.530	520	528	546	560	555	561	566
8...	29.762	750	768	787	817	830	848	852
9...	30.057	046	030	025	020	011	003	995
10...	29.548	569	589	620	647	675	710	726
11...	29.756	734	719	714	720	744	764	796
12...	29.945	900	883	867	831	860	869	881
13...	29.951	952	955	966	990	010	021	036
14...	30.120	085	077	083	082	063	068	065
15...	29.831	816	774	768	755	739	705	705
16...	29.525	495	486	488	497	510	524	544
17...	.. ...	......	......	......	......	......	......	......
18...	29.813	846	848	864	878	912	946	982
19...	30.362	347	347	359	378	382	385	386
20...	30.057	023	982	954	943	933	933	933
21...	30.249	250	237	235	231	225	222	207
22...	29.576	500	455	429	429	382	346	356
23...	... ..	......	......	......	......	......	......	......
24...	30.024	991	958	914	922	875	856	863
25...	30.038	009	019	017	964	949	914	893
26...	29.723	692	710	727	763	800	839	883
27...	29.571	516	465	441	407	381	373	368
28...	29.728	747	766	782	796	820	842	865
29...	29.911	913	918	925	948	977	992	023
30...	30.227	208	206	207	218	244	277	326
31...	30.370	341	318	312	287	276	273	269

Date. **REMARKS.**

Dec. 1. Cloudy; snow at 18*h*.; fall of water $0^{in}.12$; wind S. E.
" 2. Sprinkle of snow; wind N. W.
" 3. Changeable; wind N. W.
" 4. Changeable; wind W.
" 5. Cloudy; snow at 10*h*.; gale from S. E.
" 6. Cloudy; rain and hail; gale at 7*h*. from S.; at 16*h*. gale from W.
" 7. Snow squalls; wind W.
" 8. Changeable; snow; gale from W.
" 9. Changeable; snow; fall of water $0^{in}.09$; wind W.
" 10. Changeable; sprinkle of snow; wind S. E.

TYPO-BAROGRAPH.

December, 1867.

Date.	8*h*.	9*h*.	10*h*.	11*h*.	12*h*.	13*h*.	14*h*.	15*h*.
1...	134	133	119	100	095	085	070	055
2...	828	822	821	810	809	788	793	795
3...	577	554	536	519	497	493	506	563
4...	607	592	587	563	563	554	556	548
5...	710	728	750	773	791	823	857	864
6...	275	251	214	175	185	208	264	291
7...	568	562	569	624	670	738	771	796
8...	848	842	833	826	819	819	822	854
9...	986	976	941	917	872	838	860	743
10...	743	756	757	755	738	735	744	743
11...	819	838	851	865	886	910	926	924
12...	876	874	877	870	857	859	881	893
13...	041	054	061	062	093	107	112	110
14...	051	041	032	020	999	991	987	981
15...	701	693	674	654	633	615	598	588
16 ..	560	564	569	570	581	585	593	607
17...	......	......	......	......	......	......	......	......
18...	001	028	046	073	094	122	156	192
19...	399	418	418	418	401	381	381	378
20...	942	955	980	003	016	033	045	060
21...	184	186	173	170	127	086	054	018
22...	369	391	390	403	403	383	373	373
23...	......	......	......	......	......	......	......	......
24...	855	881	907	923	926	942	965	971
25...	853	794	744	679	624	547	500	483
26...	903	930	925	924	908	905	895	892
27...	378	369	361	394	402	408	454	494
28...	872	875	878	878	876	876	876	867
29...	038	057	061	078	080	086	112	130
30...	338	305	324	342	349	370	392	404
31...	249	219	195	161	153	140	105	071

Date.	Remarks.
Dec. 11.	Cloudy; cold; high wind N.
" 12.	Cloudy; snow; clear at 18*h*.; wind N.
" 13.	Clear; changeable; wind N.
" 14.	Cloudy; wind N. W.
" 15.	Changeable; wind N. W.
" 16.	Changeable; wind S.
" 17.	Cloudy; sprinkle of rain; clear; wind W.
" 18.	Clear; wind W.
" 19.	Changeable; snow; high wind from S. E.
" 20.	Cloudy; wind N. W.
" 21.	Snow; sleet; drizzling rain; gale of wind from S.

TYPO-BAROGRAPH.

DECEMBER, 1867.

DATE.	0h.	1h.	2h.	3h.	4h.	5h.	6h.	7h.
1...	30.199	178	158	139	128	149	166	160
2...	29.873	842	815	812	810	820	830	826
3...	29.786	765	734	720	701	670	641	606
4...	29.687	667	647	628	626	626	618	622
5...	29.566	572	576	601	625	649	666	678
6...	29.651	563	511	458	406	353	314	284
7...	29.530	520	528	546	560	555	561	566
8...	29.762	750	768	787	817	830	848	852
9...	30.057	046	030	025	020	011	003	995
10...	29.548	569	589	620	647	675	710	726
11...	29.756	734	719	714	720	744	764	796
12...	29.945	900	883	867	831	860	869	881
13...	29.951	952	955	966	990	010	021	036
14...	30.120	085	077	083	082	063	068	065
15...	29.831	816	774	768	755	739	705	705
16...	29.525	495	486	488	497	510	524	544
17...	... ...	......	......	......	......	......	......	......
18...	29.813	846	848	864	878	912	946	982
19...	30.362	347	347	359	378	382	385	386
20...	30.057	023	982	954	943	933	933	933
21...	30.249	250	237	235	231	225	222	207
22...	29.576	500	455	429	429	382	346	356
23...	... ..	......	......	......	......	......	......	......
24...	30.024	991	958	914	922	875	856	863
25...	30.038	009	019	017	964	949	914	833
26...	29.723	692	710	727	763	800	839	883
27...	29.571	516	465	441	407	381	373	368

TYPO-BAROGRAPH.

JANUARY, 1868.

DATE.	0*h*.	1*h*.	2*h*.	3*h*.	4*h*.	5*h*.	6*h*.	7*h*.
1...	29.434	332	282	232	182	133	135	136
2...	29.342	351	356	383	393	393	387	399
3...	29.599	590	583	580	585	591	591	605
4...	29.416	390	387	391	410	435	460	500
5...	30.032	026	026	026	026	026	037	053
6...	30.017	977	970	960	949	949	949	986
7...	29.949	908	890	856	854	847	850	844
8...	29.764	739	701	699	701	691	690	674
9...	29.468	450	467	506	537	576	580	599
10...	29.716	707	705	701	700	695	695	701
11...	29.668	614	608	604	603	610	627	633
12...	29.975	975	976	985	014	022	033	054
13...	30.140	128	117	121	130	149	171	193
14...	30.288	260	232	225	219	188	179	185
15...	29.855	825	808	802	802	792	792	785
16...	29.664	656	647	650	663	667	676	690
17...	29.669	660	655	657	664	676	690	709
18...	29.872	856	852	850	854	863	886	904
19...	30.197	173	167	160	152	150	139	137
20...	29.936	895	873	859	845	854	855	856
21...	29.461	426	420	447	479	518	561	608
22...	30.230	239	229	239	255	261	270	271
23...	29.832	761	721	700	670	629	625	619
24...	29.644	627	622	626	631	660	696	733
25...	29.897	887	890	870	881	886	884	895
26...	29.880	856	848	857	855	851	847	851
27...	29.792	774	755	761	777	783	787	808
28...	29.952	936	934	937	939	952	945	961
29...	29.837	797	762	759	745	732	719	739
30...	29.941	943	938	957	987	008	047	098
31...	30.262	234	220	224	235	245	267	293

DATE. REMARKS.

Jan. 1. Rain; fall of water $0^{in}.75$; wind W.
" 2. Cloudy; wind S. W.
" 3. Cloudy; snow; fall of water $0^{in}.21$; wind S.
" 4. Snow; changeable; fall of water $0^{in}.08$; wind N.
" 5. Clear and cold; wind N. E.
" 6. Changeable; wind N.
" 7. Cloudy; wind N.
" 8. Changeable; snow; gale from W.
" 9. Changeable; wind W.
" 10. Clear; changeable from 16*h*.; wind S.
" 11. Changeable; cold; wind W.

TYPO-BAROGRAPH.

December, 1867.

Date.	16*h*.	17*h*.	18*h*.	19*h*.	20*h*.	21*h*.	22*h*.	23*h*.
1...	036	027	014	989	963	953	937	913
2...	795	797	808	813	835	839	848	832
3...	575	608	651	681	696	713	725	718
4...	552	557	559	563	569	587	591	582
5...	859	867	880	889	857	840	790	730
6...	321	348	370	392	447	483	523	529
7...	804	811	826	820	814	813	804	790
8...	873	905	939	976	006	037	064	061
9...	697	652	615	582	557	550	545	544
10...	731	734	740	765	799	800	803	784
11...	930	931	961	962	964	000	997	992
12...	912	912	924	916	922	946	969	975
13...	099	102	108	112	132	132	152	129
14...	977	951	945	939	927	914	918	901
15...	574	565	556	558	565	566	569	548
16...	610	604	583	581	572	571	563	529
17...	......	......	......	......	......	......	......	......
18...	214	235	264	288	309	330	351	357
19...	340	299	277	239	221	186	147	105
20...	099	125	149	171	191	226	249	248
21...	972	932	902	861	816	769	698	640
22...	374	374	374	388	409	430	485	556
23...	......	......	......*	......	......	......	......	......
24...	973	021	013	022	023	035	039	040
25...	458	455	489	551	582	636	687	723
26...	900	830	797	762	723	666	647	624
27...	549	576	604	640	655	674	710	726

TYPO-BAROGRAPH.

JANUARY, 1868.

DATE.	16*h*.	17*h*.	18*h*.	19*h*.	20*h*.	21*h*.	22*h*.	23*h*.
1...	221	222	241	266	289	302	328	336
2...	462	481	492	510	528	535	578	593
3...	529	507	492	472	461	434	439	446
4...	860	900	940	982	030	032	034	050
5...	061	061	061	061	056	056	055	046
6...	968	955	954	954	959	973	977	970
7...	782	780	777	789	793	796	806	798
8...	535	513	501	494	494	494	495	475
9...	690	690	690	692	701	718	729	734
10...	672	663	656	655	656	656	659	659
11...	813	833	854	873	914	950	971	975
12...	103	106	108	126	142	151	162	152
13...	294	295	296	294	290	294	310	311
14...	996	946	933	920	906	893	892	876
15...	690	672	664	660	657	660	664	666
16...	659	657	656	656	658	667	680	681
17...	787	797	810	821	847	866	876	881
18...	056	066	098	133	161	187	209	213
19...	007	993	983	990	991	974	974	962
20...	653	610	533	508	497	490	493	481
21...	991	014	014	064	113	162	211	221
22...	148	113	093	073	994	977	941	896
23...	580	617	628	626	646	651	648	677
24...	818	832	854	873	876	874	886	912
25...	854	854	857	868	888	888	884	887
26...	797	781	783	785	786	792	802	799
27...	897	895	901	916	942	955	964	976
28...	941	923	912	912	905	899	899	871
29...	753	782	773	828	863	883	914	926
30...	159	176	194	218	235	256	263	263
31...	380	396	416	438	458	472	473	472

DATE.	REMARKS.
Jan. 22.	Clear to 8*h*.; cloudy; high wind from S. E.
" 23.	Cloudy; thaw; wind W.
" 24.	Cloudy; wind S.
" 25.	Cloudy; snow; wind N. W.
" 26.	Snow; fall of water from 25th, $0^{in}.50$; wind N. E.
" 27.	Snow; cloudy; fall of water $0^{in}.08$; wind N. W.
" 28.	Cloudy; snow at 21*h*.; wind N.
" 29.	Snow; clear; fall of water $0^{in}.33$; wind W.
" 30.	Cloudy; wind S.
" 31.	Changeable; wind S.

TYPO-BAROGRAPH.

FEBRUARY, 1868.

DATE.	0*h*.	1*h*.	2*h*.	3*h*.	4*h*.	5*h*.	6*h*.	7*h*.
1...	30.448	419	387	373	357	340	334	322
2...	30.049	005	978	969	966	956	961	961
3...	30.432	427	418	418	416	418	418	419
4...	30.120	105	110	120	126	140	151	182
5...	30.132	081	041	005	986	964	951	933
6...	29.379	362	359	374	393	433	479	473
7...	......	......	......	......	......	......	......	......
8...	......	......	......	......	......	.....	......	......
9...	......	......	......	......	......	......	......	......
10...	30.020	053	085	116	147	171	191	193
11...	30.116	115	115	112	109	128	156	161
12...	30.165	144	128	131	131	133	151	156
13...	29.860	794	790	763	754	762	777	810
14...	30.147	152	131	128	115	066	062	058
15...	29.789	751	731	731	741	751	761	771
16...	30.009	994	988	985	990	992	993	993
17...	29.669	627	590	554	545	534	537	546
18...	29.868	834	827	827	826	804	801	802
19...	29.611	600	602	609	633	644	661	684
20...	29.692	663	647	632	609	585	565	556
21...	29.610	623	652	678	710	768	812	845
22...	30.167	173	170	184	199	205	225	246
23...	30.504	499	493	490	496	504	532	563
24...	30.558	519	500	495	481	477	470	468
25...	30.358	328	312	300	292	288	284	280
26...	30.233	210	184	165	158	140	129	125
27...	29.748	688	647	627	606	597	570	563
28...	29.332	317	307	304	305	314	325	331
29...	29.582	575	576	596	619	632	654	693

DATE. **REMARKS.**

Feb. 1. Changeable; wind S.
" 2. Clear; wind W.
" 3. Clear to 14*h*.; cloudy; wind S.
" 4. Cloudy; wind S.
" 5. Changeable; snow; fall of water $0^{in}.25$; wind S.
" 6. Snow; changeable; strong wind W.
" 7. Clear and cold; wind S.
" 8. Changeable; cloudy; wind S.
" 9. Rain; changeable; cold; wind W.
" 10. Changeable; wind N.

TYPO-BAROGRAPH.

February, 1868.

Date.	8*h*.	9*h*.	10*h*.	11*h*.	12*h*.	13*h*.	14*h*.	15*h*.
1...	307	295	287	282	265	247	229	211
2...	955	955	955	955	967	987	065	113
3...	419	396	379	374	343	313	286	259
4...	192	199	215	221	201	193	201	195
5...	905	847	828	771	746	708	656	608
6...	481	521	564	577	580	586	599	627
7...	......	......	......	......	......	......	......	......
8...	......	......	......	......	......	......	......	......
9...	......	......	......	......	......	......	......	......
10...	193	187	169	172	168	144	147	164
11...	167	187	189	192	196	195	192	206
12...	156	154	144	133	126	122	117	092
13...	830	854	883	944	984	000	014	032
14...	058	040	022	003	984	965	946	927
15...	781	791	801	811	825	835	852	871
16...	987	987	980	963	956	937	910	877
17...	555	564	573	582	582	603	631	676
18...	784	767	746	717	687	666	636	620
19...	717	729	739	741	749	759	761	753
20...	540	521	497	497	495	500	498	508
21...	868	906	929	944	930	954	979	001
22...	262	284	300	317	329	341	341	346
23...	566	579	573	570	572	570	570	562
24...	454	443	440	430	421	403	401	385
25...	276	282	284	285	280	280	274	262
26...	120	099	078	064	045	017	987	957
27...	549	534	508	484	451	427	419	396
28...	339	352	343	355	364	374	389	401
29...	723	740	747	747	755	759	772	787

Date.	Remarks.
Feb. 11.	Clear; wind S.
" 12.	Changeable; cloudy; wind S.
" 13.	Changeable; snow; changeable; wind N. W.
" 14.	Cloudy; strong wind S.
" 15.	Cloudy; wind N.
" 16.	Changeable; strong wind S. E.
" 17.	Snow; changeable; fall of water $0^{in}.08$; wind W.
" 18.	Clear to 12*h*.; cloudy; snow; wind S.
" 19.	Changeable; wind S.
" 20.	Changeable; thaw; wind W.

TYPO-BAROGRAPH.

FEBRUARY, 1868.

DATE.	16h.	17h.	18h.	19h.	20h.	21h.	22h.	23h.
1...	193	175	157	139	121	103	093	077
2...	154	202	254	278	344	381	407	431
3...	232	205	178	151	135	131	134	135
4...	197	197	192	196	200	195	176	166
5...	567	554	513	488	463	438	417	400
6...	637	668	687	723	767	808	849	897
7...	......	......	......	......	......	......	......	......
8...	......	......	.....	......	......	......	......	......
9...	......	......	......	......	......	......	.....	......
10...	141	122	124	124	124	147	146	132
11...	222	222	211	212	229	215	244	193
12...	083	053	032	022	001	963	922	897
13...	057	069	068	096	122	144	148	157
14...	908	889	870	851	832	830	828	825
15...	887	911	936	954	977	002	017	030
16...	874	852	834	802	785	762	744	705
17...	701	728	755	796	833	859	866	872
18...	600	610	598	600	608	607	610	600
19...	748	761	763	767	766	758	747	726
20...	504	522	533	542	563	563	601	604
21...	024	047	070	093	115	136	159	162
22...	355	365	372	399	423	444	465	496
23...	573	577	577	577	577	577	577	572
24...	383	381	378	381	390	389	387	374
25...	257	257	252	252	256	261	263	249
26...	925	913	898	884	858	839	818	790
27...	373	364	357	349	361	360	357	341
28...	429	450	480	494	530	549	559	577
29...	809	813	823	832	842	844	846	825

DATE.	REMARKS.
Feb. 21.	Changeable; wind N.
" 22.	Clear and cold; wind N.
" 23.	Clear and cold; wind N.
" 24.	Snow; cloudy; fall of water 0^{in}.08; wind N.
" 25.	Cloudy; wind N.
" 26.	Cloudy; snow; fall of water 0^{in}.04; wind S. E.
" 27.	Snow; cloudy; fall of water 0^{in}.08; wind W.
" 28.	Cloudy; changeable; high wind from W.
" 29.	Changeable; wind S.

TYPO-BAROGRAPH.

March, 1868.

Date.	0*h*.	1*h*.	2*h*.	3*h*.	4*h*.	5*h*.	6*h*.	7*h*.
1...	29.815	789	773	765	750	724	713	708
2...	29.240	209	203	208	222	259	300	332
3...	29.680	674	677	689	704	724	751	766
4...	29.882	875	889	909	925	950	981	015
5...	30.319	356	359	346	349	365	376	394
6...	30.264	235	194	181	170	157	146	134
7...	30.063	049	032	025	011	008	002	995
8...	29.942	938	950	959	974	009	643	075
9...	30.211	201	169	167	167	164	161	157
10...	29.915	894	874	859	854	886	909	937
11...	30.341	345	351	373	375	383	386	409
12...	30.181	147	104	069	032	989	973	947
13...	29.576	588	572	576	567	569	577	586
14...	29.724	713	703	693	693	693	693	688
15...	29.728	733	738	743	748	753	758	763
16...	29.785	764	729	715	716	726	737	749
17...	29.585	565	551	553	567	536	528	512
18...	29.790	805	814	835	875	914	950	971
19...	30.091	065	052	038	026	012	010	010
20...	29.859	843	812	803	780	779	769	752
21...	29.264	265	250	248	249	253	250	299
22...	29.618	616	613	624	645	662	694	713
23...	29.678	626	611	583	580	577	574	570
24...	29.779	790	800	804	827	855	886	927
25...	30.044	020	012	000	986	972	968	968
26...	30.088	058	037	020	991	988	970	967
27...	29.753	718	693	670	657	655	651	651
28...	29.732	716	710	710	717	737	769	790
29...	30.051	048	043	041	036	036	035	044
30...	30.053	021	994	971	945	934	929	928
31...	29.737	709	678	659	649	642	632	630

Date. **Remarks.**

March 1. Cloudy; snow; wind N.
" 2. Snow; fall of water $1^{\text{in}}.00$; wind W.
" 3. Cloudy; gale from W.
" 4. Clear; wind W.
" 5. Changeable; gale from S. E.
" 6. Sprinkle of rain; thaw; wind S. E.
" 7. Cloudy; wind N. W.
" 8. Clear and pleasant; wind N. E.
" 9. Cloudy; sprinkle of rain; wind N. W.
" 10. Sprinkle of rain; cloudy; wind N.
" 11. Changeable; wind S.

TYPO-BAROGRAPH.

March, 1868.

Date.	8*h*.	9*h*.	10*h*.	11*h*.	12*h*.	13*h*.	14*h*.	15*h*.
1...	671	672	673	643	607	587	534	505
2...	361	409	440	455	469	504	525	529
3...	769	779	780	773	775	777	767	780
4...	046	072	099	126	135	141	153	159
5...	408	422	425	410	397	393	390	375
6...	112	105	108	089	088	086	084	082
7...	970	950	935	923	901	895	859	845
8...	103	129	140	146	154	158	170	170
9...	149	151	145	123	110	084	083	061
10...	969	975	976	993	002	017	031	045
11...	411	416	421	424	413	411	387	366
12...	897	863	832	791	752	730	670	631
13...	592	592	592	610	606	610	613	605
14...	686	672	668	665	662	654	653	653
15...	769	775	791	789	809	822	795	807
16...	753	738	727	698	693	690	689	668
17...	499	510	532	533	534	528	577	616
18...	995	009	011	015	016	016	009	007
19...	010	009	991	986	981	974	968	960
20...	733	706	680	676	655	602	539	508
21...	317	318	324	324	330	337	352	381
22...	727	751	765	774	783	784	784	777
23...	566	562	558	554	549	563	577	591
24 ..	952	974	982	004	016	020	022	030
25...	975	979	995	995	009	017	017	015
26...	967	967	966	948	937	928	908	889
27...	648	651	656	661	666	666	663	663
28...	819	845	864	890	897	909	919	930
29...	064	074	077	094	103	113	116	116
30...	935	932	909	906	897	881	868	847
31...	630	625	620	620	620	622	617	610

Date. **Remarks.**

March 12. Rain; fall of water $0^{\text{in}}.20$; wind S.
" 13. Rain; changeable; fall of water $0^{\text{in}}.10$; wind N. W.
" 14. Changeable; rain; fall of water $0^{\text{in}}.30$; wind S.
" 15. Changeable; rain; fall of water $0^{\text{in}}.50$; wind S.
" 16. Rain; foggy; fall of water $0^{\text{in}}.20$; wind S.
" 17. Changeable; gale from W.
" 18. Changeable to 12*h.;* clear; wind N.
" 19. Changeable; wind S. W.
" 20. Cloudy; snow at 14*h.;* high wind N.
" 21. Snow; changeable; fall of water $0^{\text{in}}.12$.

TYPO-BAROGRAPH.

MARCH, 1868.

DATE.	16h.	17h.	18h.	19h.	20h.	21h.	22h.	23h.
1...	459	422	387	339	338	308	270	248
2...	541	567	597	622	647	648	682	685
3...	802	802	819	833	841	870	878	885
4...	181	202	227	257	287	302	300	318
5...	368	371	359	351	347	339	311	299
6...	080	078	076	074	072	070	068	068
7...	856	829	841	870	879	907	895	909.
8...	171	191	206	211	222	232	229	218
9...	054	038	034	015	999	983	963	933
10...	080	114	154	187	235	272	295	329
11...	357	347	331	312	293	283	254	226
12...	618	606	616	603	589	589	594	586
13...	617	635	649	670	694	709	714	709
14...	654	671	694	708	714	730	734	731
15...	795	790	814	833	845	845	828	802
16...	657	657	655	653	650	642	617	605
17...	667	723	718	732	725	730	727	752
18...	021	055	065	092	106	123	129	115
19...	946	927	923	922	926	909	893	866
20...	470	452	435	435	423	353	305	262
21...	413	449	485	515	549	577	606	613
22...	782	768	747	729	710	709	705	683
23...	605	619	633	648	679	717	732	764
24...	051	049	060	062	062	064	066	060
25...	015	037	053	086	092	106	106	101
26...	869	863	858	857	850	831	813	779
27..	671	682	700	720	723	740	742	737
28...	947	969	993	018	035	049	052	052
29...	116	116	127	133	124	115	102	085
30...	824	823	815	815	808	801	786	760
31...	607	607	607	607	603	596	572	538

DATE.	REMARKS.
March 22.	Clear; wind W.
" 23.	Cloudy; wind N.
" 24.	Clear; wind S.
" 25.	Clear; wind N.
" 26.	Clear; wind S. W.
" 27.	Changeable; wind N.
" 28.	Clear; wind N.
" 29.	Clear; wind S.
" 30.	Changeable; wind N.
" 31.	Clear; wind S.

TYPO-BAROGRAPH.

APRIL, 1868.

DATE.	0*h*.	1*h*.	2*h*.	3*h*.	4*h*.	5*h*.	6*h*.	7*h*.
1...	29.525	481	446	424	421	417	427	441
2...	29.447	438	438	424	413	412	444	480
3...	29.722	703	685	662	638	624	622	622
4...	29.501	499	481	472	469	466	472	490
5...	29.686	687	697	709	703	713	742	764
6...	29.948	924	905	904	900	820	887	891
7...	29.498	447	382	306	227	161	139	117
8...	29.359	359	361	352	419	472	546	586
9...	30.121	142	128	121	116	123	127	138
10...	30.019	999	964	928	900	868	858	848
11...	29.775	748	728	700	673	646	621	595
12...	29.715	745	751	761	796	808	830	832
13...	30.128	123	121	121	115	124	124	124
14...	30.093	052	024	003	961	919	911	919
15...	29.727	694	658	640	621	588	567	564
16...	29.509	504	475	459	442	415	443	432
17...	29.541	534	499	475	460	446	543	583
18...	29.881	927	941	956	968	975	992	013
19...	30.145	134	116	087	068	056	055	075
20...	29.963	925	910	890	873	856	854	851
21...	29.869	852	841	824	814	825	815	831
22...	29.994	988	987	979	978	977	978	978
23...	29.853	922	972	990	011	022	051	094
24...	30.228	209	178	157	140	131	113	108
25...	30.066	053	019	002	980	976	969	967
26...	29.975	977	966	966	980	998	015	041
27...	29.986	977	958	940	934	939	958	970
28...	30.075	068	054	031	024	017	001	003
29...	30.001	980	963	935	908	883	854	845
30...	29.512	474	442	433	435	473	477	504

DATE.	REMARKS.
April 1.	Cloudy; rain; fall of water $0^{in}.06$; wind N.
" 2.	Sprinkle of rain; wind W.
" 3.	Changeable; snow; fall of water $0^{in}.40$; wind W.
" 4.	Cloudy; high wind W.; cold.
" 5.	Changeable; sprinkle of snow; gale from W.
" 6.	Cloudy; snow; fall of water $0^{in}.42$; wind N. E.
" 7.	Snow to 10*h*.; changeable; fall of water $0^{in}.60$; wind W.
" 8.	Changeable; clear; heavy squall of snow; high wind from W.
" 9.	Cloudy; snow at 18*h*.; fall of water $0^{in}.30$; wind S. E.
" 10.	Snow; changeable; fall of water $0^{in}.03$; wind N. W.

TYPO-BAROGRAPH.

APRIL, 1868

DATE.	8*h*.	9*h*.	10*h*.	11*h*.	12*h*.	13*h*.	14*h*.	15*h*.
1...	456	465	475	480	480	474	470	465
2...	516	552	575	585	611	631	646	665
3...	624	607	594	582	562	546	518	499
4...	500	487	461	434	424	406	402	401
5...	817	826	841	848	855	862	869	876
6...	916	924	927	918	879	865	830	820
7...	095	073	051	076	101	126	151	176
8...	654	700	744	783	838	860	869	907
9...	166	167	180	183	184	164	152	152
10...	848	843	829	815	806	800	779	776
11...	589	559	541	512	492	468	428	415
12...	857	881	907	938	965	973	992	003
13...	143	154	175	191	197	200	195	183
14...	935	905	884	865	830	819	802	784
15...	561	563	539	509	478	467	481	501
16...	456	460	467	461	463	497	500	502
17...	613	643	640	634	634	635	651	680
18...	053	067	076	094	106	113	114	131
19...	103	110	104	082	069	054	047	030
20...	851	851	838	838	835	832	840	850
21...	843	854	856	853	856	856	862	872
22...	978	987	985	976	969	943	906	878
23...	136	166	175	195	212	216	218	235
24...	108	108	108	108	111	105	105	110
25...	970	990	004	004	008	000	000	998
26...	059	070	059	058	061	065	066	086
27...	006	010	028	021	019	021	015	023
28...	022	037	046	060	066	070	070	061
29...	845	817	789	755	714	687	661	645
30...	530	553	564	565	572	590	621	663

DATE. **REMARKS.**

April 11. Cloudy; sprinkle of rain; wind W.
" 12. Cloudy to 10*h*.; clear; wind N.
" 13. Clear; wind S.
" 14. Rain; fall of water $0^{in}.20$; wind S.
" 15. Cloudy; sprinkle of rain; wind S.
" 16. Cloudy; sprinkle of rain; wind S. W.
" 17. Sprinkle of rain; cloudy; wind W.
" 18. Changeable; wind S.
" 19. Rain; fall of water $0^{in}.10$; wind S.
" 20. Rain to 12*h*.; cloudy; fall of water $0^{in}.30$; wind S.

TYPO-BAROGRAPH.

April, 1868.

Date.	16*h*.	17*h*.	18*h*.	19*h*.	20*h*.	21*h*.	22*h*.	23*h*.
1...	450	442	441	453	460	461	472	463
2...	680	704	734	749	754	760	750	746
3...	480	477	484	513	522	526	529	504
4...	396	422	472	558	608	640	654	667
5...	883	892	901	907	912	932	952	972
6...	802	760	738	736	716	681	621	544
7...	201	227	253	278	304	329	345	349
8...	942	972	987	992	065	080	102	110
9...	125	116	116	122	108	098	075	046
10...	781	770	781	788	790	788	789	781
11...	405	401	471	523	578	624	672	702
12...	017	026	059	080	091	107	125	128
13...	189	191	200	188	185	188	168	140
14...	766	762	768	772	776	775	778	757
15...	474	491	491	487	521	536	545	524
16...	502	523	543	576	586	581	581	568
17...	694	720	743	780	793	814	839	871
18...	150	172	195	210	203	187	174	168
19...	026	016	021	021	017	008	002	996
20...	854	864	870	890	897	883	865	869
21...	886	910	950	962	977	979	983	983
22...	844	831	831	810	776	747	735	788
23...	238	248	265	271	277	277	271	257
24...	095	078	080	088	094	098	098	082
25...	998	998	998	036	038	033	022	995
26...	077	071	061	066	058	041	031	011
27...	037	054	065	080	082	082	088	087

TYPO-BAROGRAPH.

May, 1868.

Date.	0*h*.	1*h*.	2*h*.	3*h*.	4*h*.	5*h*.	6*h*.	7*h*.
1...	29.901	889	887	867	856	871	877	885
2...	29.846	842	839	831	820	817	817	813
3...	29.817	807	798	792	785	780	779	787
4...	29.791	759	730	711	708	699	687	669
5...	29.570	527	521	518	524	524	521	515
6...	29.523	523	517	528	547	563	573	577
7...	29.541	518	509	500	484	481	487	491
8...	29.460	472	480	490	510	530	545	564
9...	29.658	646	840	635	635	641	655	672
10...	29.816	815	816	825	857	883	903	923
11...	30.081	077	071	060	058	057	054	054
12...	30.034	021	003	996	976	963	956	958
13...	29.866	846	819	783	752	728	692	658
14...	29.535	523	523	523	523	525	540	568
15...	29.785	781	765	753	753	753	765	784
16...	29.761	745	732	712	705	696	688	689
17...	29.649	629	616	598	594	591	599	616
18...	29.545	544	542	551	568	579	590	604
19...	29.800	800	804	806	806	811	811	825
20...	29.900	899	887	864	849	835	830	828
21...	29.429	398	366	391	381	381	384	384
22...	29.568	575	588	595	606	618	625	647
23...	29.761	761	756	747	746	733	733	733
24...	29.527	519	513	513	522	528	536	544
25...	29.660	658	658	655	654	664	678	698
26...	29.805	801	778	758	754	742	740	739
27...	29.703	686	656	632	615	599	590	590
28...	29.654	649	649	651	654	655	655	663
29...	29.659	659	655	634	630	630	628	626
30...	29.621	615	604	595	592	588	585	590
31...	29.757	747	732	731	738	741	759	779

Date. REMARKS.

May 1. Cloudy; rain; fall of water $0^{in}.60$; wind N.
" 2. Rain; changeable; fall of water $0^{in}.50$; wind N.
" 3. Clear to 10*h*.; changeable; wind S.
" 4. Changeable; wind S.
" 5. Showers of rain; fall of water $0^{in}.50$; wind S.
" 6. Shower of rain; some snow; fall of water $0^{in}.10$; wind N.
" 7. Rain; at 17*h*. snow storm; fall of water $0^{in}.60$; wind N. W.
" 8. Changeable; wind N. W.
" 9. Clear; wind N. E.
" 10. Cloudy; wind N. E.
" 11. Changeable; wind S.

TYPO-BAROGRAPH.

MAY, 1868.

DATE.	8*h*.	9*h*.	10*h*.	11*h*.	12*h*.	13*h*.	14*h*.	15*h*.
1...	896	910	922	904	914	917	904	895
2...	811	811	810	810	806	801	797	786
3...	799	813	830	835	838	834	851	853
4...	674	686	686	685	677	670	661	655
5...	517	519	522	525	528	531	534	537
6...	581	587	582	579	578	559	552	549
7...	487	481	459	434	406	378	390	394
8...	581	597	604	606	610	614	614	621
9...	687	703	717	724	730	741	754	750
10...	946	963	979	983	987	987	987	994
11...	055	061	063	063	065	067	066	063
12...	980	992	992	989	989	984	977	956
13...	637	638	639	623	619	565	552	543
14...	606	643	652	659	677	687	689	690
15...	796	819	821	821	821	814	806	803
16...	698	703	703	703	700	699	693	683
17...	618	620	620	614	603	592	589	586
18...	632	661	671	676	696	701	707	709
19...	841	864	878	888	894	895	898	898
20...	827	826	822	801	780	764	742	707
21...	387	401	404	416	426	436	446	461
22...	664	680	695	700	751	703	703	703
23...	727	717	702	683	636	619	582	572
24...	550	568	575	581	582	582	582	586
25...	705	727	743	746	756	757	757	760
26...	737	749	750	749	749	749	744	744
27...	590	605	604	607	619	619	614	615
28...	674	683	683	683	671	670	662	660
29...	623	623	622	620	617	611	600	594
30...	612	641	652	660	693	707	712	712
31...	810	823	828	833	829	829	822	822

DATE.	REMARKS.
May 12.	Cloudy; wind N.
" 13.	Rain; fall of water $1^{in}.5$; wind N. E.
" 14.	Changeable; wind S.
" 15.	Cloudy; wind S.
" 16.	Changeable; wind S.
" 17.	Cloudy; rain; fall of water $0^{in}.60$; wind N.
" 18.	Rain; fall of water $0^{in}.60$; wind N.
" 19.	Cloudy; showers of rain; fall of water $0^{in}.10$; wind S.
" 20.	Cloudy to 9*h*.; rain; fall of water $1^{in}.10$; wind N.
" 21.	Rain; fall of water $1^{in}.25$; wind S. E.

TYPO-BAROGRAPH.

MAY, 1868.

DATE.	16*h*.	17*h*.	18*h*.	19*h*.	20*h*.	21*h*.	22*h*.	23*h*.
1...	890	913	928	923	917	897	893	864
2...	780	779	806	815	821	821	821	821
3...	853	850	850	865	869	862	840	819
4...	636	627	631	624	614	596	578	575
5...	540	543	546	549	552	552	549	542
6...	558	553	550	550	572	562	533	561
7...	414	423	423	423	424	430	434	451
8...	630	639	656	662	681	681	678	666
9...	761	773	781	796	811	815	815	816
10...	007	024	039	051	064	065	074	079
11...	069	081	086	068	073	071	068	056
12...	949	946	946	946	942	919	904	891
13...	542	537	538	541	543	535	535	535
14...	700	729	747	766	785	789	794	794
15...	793	793	799	803	807	800	798	798
16...	679	679	690	690	690	688	688	669
17...	583	580	577	574	571	567	563	559
18...	721	740	758	774	788	794	800	800
19...	894	900	911	924	934	935	914	908
20...	672	640	605	581	553	519	504	470
21...	469	481	505	519	537	542	542	542
22...	705	715	726	735	744	758	761	759
23...	557	556	556	556	559	546	545	537
24...	593	606	618	627	636	642	652	658
25...	767	782	785	789	813	813	818	818
26...	751	751	764	764	760	752	746	738
27...	609	608	614	614	622	624	624	622
28...	670	674	674	674	674	674	673	666
29...	594	596	607	609	612	613	619	622
30...	723	744	747	749	752	756	757	757
31...	837	858	858	861	867	872	858	849

DATE.	REMARKS.
May 22.	Cloudy; rain; fall of water $0^{in}.10$; wind N. E.
" 23.	Rain; cloudy; wind N.
" 24.	Rain; fall of water from 0*h*. 23d. to 0*h*. 25th., $1^{in}.30$; wind N. E.
" 25.	Changeable; wind N. W.
" 26.	Changeable; wind S.
" 27.	Clear; wind S.
" 28.	Cloudy; wind S.
" 29.	Sprinkle of rain; wind S.
" 30.	Changeable; gale from W.
" 31.	Clear; wind N. W.

TYPO-BAROGRAPH.

JUNE, 1868.

DATE.	0h.	1h.	2h.	3h.	4h.	5h.	6h.	7h.
1...	29.813	799	790	788	781	779	785	793
2...	29.817	798	783	778	778	780	801	840
3...	30.025	009	001	991	978	972	971	976
4...	30.140	115	103	085	083	086	090	100
5...	30.092	064	046	988	963	949	944	923
6...	29.757	730	712	682	644	631	646	661
7...	29.968	964	960	959	955	956	964	978
8...	29.940	931	898	886	861	847	835	833
9...	29.846	859	858	847	851	859	878	875
10...	30.020	010	998	990	976	965	968	975
11...	29.995	984	962	939	911	895	887	883
12...	29.658	650	644	640	655	668	677	684
13...	29.859	857	860	869	863	859	862	867
14...	29.952	940	926	914	899	894	892	890
15...	29.905	877	854	833	808	798	781	777
16...	29.732	726	711	715	710	703	699	709
17...	29.734	727	718	697	688	692	690	684
18...	29.694	694	689	684	679	674	669	664
19...	29.569	557	539	527	506	492	480	471
20...	......	......	......	......	......	......	......	......
21...	......	......	......	......	......	......	......	......
22...	......	......	......	......	......	......	......	......
23...	29.766	766	764	757	752	747	757	771
24...	29.934	933	933	926	930	934	942	951
25...	30.060	045	031	022	005	979	978	981
26...	29.849	839	820	814	814	766	758	762
27...	29.674	646	635	628	615	610	610	614

TYPO-BAROGRAPH.

JUNE, 1868.

DATE.	8*h*.	9*h*.	10*h*.	11*h*.	12*h*.	13*h*.	14*h*.	15*h*.
1...	801	815	816	822	823	823	823	826
2...	867	901	915	929	939	939	939	953
3...	986	001	024	059	076	080	089	096
4...	113	140	135	142	132	118	117	106
5...	934	926	904	892	897	888	879	870
6...	676	691	696	722	730	727	748	755
7...	983	992	997	002	990	990	994	967
8...	842	848	839	835	821	832	832	832
9...	900	918	926	946	953	955	967	980
10...	983	987	990	992	992	989	995	995
11...	868	849	828	800	783	756	745	718
12...	704	714	727	723	728	738	740	753
13...	874	899	911	921	920	921	928	925
14...	895	913	915	926	929	926	928	929
15...	791	800	788	789	792	776	780	771
16...	712	733	731	736	735	728	723	728
17...	692	701	712	715	719	718	711	709
18...	659	654	656	663	656	666	648	645
19...	483	489	490	490	489	488	475	465
20...	......	......	......	......	......	......	......	......
21...	......	......	......	......	......	......	......	......
22...	......	......	......	......	......	......	......	......
23...	800	808	818	829	836	842	855	860
24...	962	972	978	992	010	010	015	023
25...	984	989	982	975	966	952	934	931
26...	766	773	768	752	740	731	729	721
27...	616	633	644	643	642	646	649	653
28...	789	814	833	849	856	856	862	885
29...	936	945	948	963	969	973	978	983
30...	991	996	989	999	006	007	003	998

DATE. **REMARKS.**

June 10. Changeable; wind S.

" 11. Rain to 12*h*.; cloudy; fall of water 0^{in}.45; wind N. E.

" 12. Changeable; rain; fall of water 0^{in}.20; wind N. E.

" 13. Changeable; wind S.

" 14. Clear; wind S.

" 15. Changeable; heavy thunder shower at 13*h*.; fall of water 0^{in}.50; wind S.

" 16. Rain; cloudy; wind W.

" 17. Clear; hazy; warm; wind S.

" 18. Clear; wind S.

" 19. Clear; wind S.

TYPO-BAROGRAPH.

JUNE, 1868.

DATE.	16h.	17h.	18h.	19h.	20h.	21h.	22h.	23h.
1...	826	841	852	861	867	867	859	839
2...	976	989	997	013	027	039	044	044
3...	105	124	129	139	148	180	164	147
4...	093	109	110	108	125	123	116	112
5...	861	852	843	833	816	803	786	784
6...	779	820	852	902	919	946	965	962
7...	971	988	008	017	023	001	992	959
8...	832	832	832	832	841	831	822	852
9...	996	004	018	035	039	045	040	032
10...	997	004	008	014	999	998	002	991
11...	711	706	712	698	696	692	675	658
12...	762	781	800	816	833	839	851	856
13...	933	944	960	969	974	971	962	959
14...	941	955	971	973	968	949	937	930
15...	789	783	777	768	755	744	741	738
16...	741	754	766	779	792	763	747	744
17...	715	725	730	732	728	716	706	703
18...	639	634	641	625	614	603	592	580
19...	468	472	483	488	496	493	488	488
20...	......	......	......	......	......	......	......	......
21...	......	......	......	......	......	......	......	......
22...	......	......	......	......	......	......	......	......
23...	870	883	893	917	922	933	935	932
24...	045	052	069	085	094	094	085	072
25...	934	932	929	927	924	909	888	867
26...	711	710	713	713	710	701	692	684
27...	668	691	702	722	737	735	746	744

TYPO-BAROGRAPH.

July, 1868.

Date.	0h.	1h.	2h.	3h.	4h.	5h.	6h.	7h.
1...	......	......	......	......	......	......	......	......
2...	29.989	960	948	929	922	908	912	909
3...	29.931	912	888	876	861	861	872	913
4...	29.875	864	842	833	816	806	803	803
5...	29.798	785	770	760	755	753	773	783
6...	29.954	934	919	900	880	873	866	866
7...	......	......	......	......	......	......	......	......
8...	29.741	741	729	726	711	702	708	717
9...	29.784	812	799	806	799	801	812	827
10...	29.881	870	853	833	814	814	806	811
11...	29.820	808	798	793	785	773	771	771
12...	29.801	789	776	768	755	756	756	777
13...	29.817	802	792	777	768	761	768	780
14...	29.813	791	775	765	745	740	740	745
15...	29.661	645	628	607	587	585	586	590
16...	29.691	693	696	698	698	704	709	715
17...	29.804	790	768	761	753	749	746	739
18...	29.748	737	722	720	698	695	691	693
19...	29.722	713	713	709	705	695	709	726
20...	29.851	846	835	822	818	812	832	838
21...	29.812	792	778	754	740	732	726	720
22...	29.635	617	602	601	593	607	617	625
23...	29.720	700	682	671	668	660	669	667
24...	29.664	658	649	637	620	625	617	623
25...	29.585	583	575	580	586	599	626	651
26...	29.825	823	818	798	783	780	782	792
27...	29.893	880	864	862	858	846	842	842
28...	29.878	864	848	839	829	825	823	829
29...	29.867	853	832	816	801	800	800	818
30...	29.863	848	827	809	805	819	826	825
31...	29.703	679	662	622	601	630	624	633

Date. **Remarks.**

July 1. Cloudy; rain; wind S.
" 2. Changeable; wind S.
" 3. Changeable; warm; wind S.
" 4. Clear; warm; wind N. W.
" 5. Clear; warm; wind S.
" 6. Clear; cloudy; wind S.
" 7. Rain; cloudy; fall of water $0^{in}.40$; wind S.
" 8. Changeable; wind W.
" 9. Shower of rain; fall of water $0^{in}.30$; wind S. E.
" 10. Changeable; wind W.
" 11. Clear; wind N.

TYPO-BAROGRAPH.

AUGUST, 1868.

DATE.	0*h*.	1*h*.	2*h*.	3*h*.	4*h*.	5*h*.	6*h*.	7*h*.
1...	29.533	509	485	466	461	449	435	439
2...	29.424	414	397	390	384	381	388	406
3...	29.626	621	621	608	614	619	622	640
4...	29.825	835	835	842	843	850	856	866
5...	30.012	995	975	957	955	949	956	976
6...	30.032	031	023	004	993	987	982	969
7...	29.830	809	785	750	734	722	718	712
8...	29.597	585	557	544	534	531	534	525
9...	29.516	547	551	535	577	579	586	599
10...	29.820	816	815	795	782	783	786	807
11...	29.757	745	739	713	703	714	710	704
12...	29.758	771	780	788	794	818	810	814
13...	29.906	881	864	847	829	828	813	824
14...	29.909	889	867	857	839	824	821	818
15...	29.806	782	758	741	727	712	703	701
16...	29.842	846	839	828	830	842	866	887
17...	30.089	077	051	043	025	023	011	015
18...	30.022	024	024	965	946	936	934	932
19...	29.800	789	771	751	735	742	782	778
20...	29.734	734	725	718	717	713	724	734
21...	29.909	903	891	882	882	882	880	860
22...	30.006	994	968	954	940	924	912	895
23...	39.915	907	880	865	840	832	807	786
24...	29.854	837	819	812	802	802	800	806
25...	29.897	881	872	868	858	854	848	837
26...	29.912	896	881	867	847	840	846	853
27...	30.090	096	090	079	056	054	054	052

TYPO-BAROGRAPH.

AUGUST, 1868.

DATE.	8*h*.	9*h*.	10*h*.	11*h*.	12*h*.	13*h*.	14*h*.	15*h*.
1...	446	461	463	449	449	444	443	438
2...	431	456	462	460	468	474	480	492
3...	660	694	709	706	706	709	719	710
4...	875	894	902	911	924	929	929	918
5...	987	008	998	996	010	015	004	003
6...	970	978	965	961	951	942	936	917
7...	719	723	717	700	690	681	663	648
8...	521	540	540	545	551	546	541	530
9...	626	640	664	674	680	697	707	716
10...	822	833	821	805	807	819	807	798
11...	702	701	689	680	663	665	659	698
12...	836	856	871	882	896	901	909	915
13...	841	853	863	867	881	887	889	898
14...	833	854	854	858	863	862	858	856
15...	709	713	712	705	710	711	712	719
16...	911	938	954	983	994	999	000	021
17...	020	036	043	041	049	047	042	036
18...	955	950	920	920	883	897	887	884
19...	790	785	776	748	734	730	733	736
20...	766	785	782	789	802	803	808	816
21...	892	917	930	943	955	956	960	964
22...	897	913	916	921	922	922	923	923
23...	798	808	811	818	819	818	825	829
24...	823	832	837	838	840	844	844	847
25...	848	859	866	876	881	884	891	895
26...	860	867	874	881	914	921	950	961
27...	072	077	088	098	101	102	106	106
28...	972	973	973	968	959	941	925	919
29...	689	693	697	697	714	710	711	710
30...	825	846	854	859	865	872	878	878
31...	745	725	710	704	680	656	646	615

DATE.	REMARKS.
Aug. 12.	Showery; changeable; fall of water for 11th and 12th, $0^{in}.18$; wind S.
" 13.	Changeable; wind S.
" 14.	Clear; wind S.
" 15.	Cloudy; shower at 12*h*.; wind N.
" 16.	Clear; wind N.
" 17.	Changeable; gale from S.
" 18.	Cloudy; gale from S.
" 19.	Rain; fall of water $1^{in}.30$; wind W.
" 20.	Showers; fall of water $0^{in}.23$; wind N.
" 21.	Clear; wind N. W.

TYPO-BAROGRAPH.

AUGUST, 1868.

DATE.	16*h*.	17*h*.	18*h*.	19*h*.	20*h*.	21*h*.	22*h*.	23*h*.
1...	439	441	459	463	464	464	455	444
2...	508	534	548	576	599	621	628	629
3...	739	756	757	782	792	804	807	818
4...	928	949	974	984	991	005	014	016
5...	001	009	016	021	025	027	033	036
6...	905	904	903	898	898	885	871	857
7...	631	637	646	637	622	623	623	625
8...	537	542	547	551	547	542	537	535
9...	721	741	759	788	802	811	824	822
10...	793	797	803	802	800	784	764	759
11...	704	704	725	745	758	759	766	763
12...	918	930	945	949	947	950	943	921
13...	899	909	928	940	944	944	941	924
14...	855	858	867	873	875	877	859	835
15...	726	747	752	788	824	832	842	854
16...	025	045	069	076	100	097	099	102
17...	038	041	049	054	051	051	041	040
18...	878	872	865	861	864	858	869	835
19...	739	741	744	746	749	752	747	740
20...	829	840	867	878	885	896	912	916
21...	971	984	000	009	014	027	038	023
22...	924	935	955	960	961	956	952	937
23...	833	846	857	866	867	872	872	872
24...	856	874	890	903	910	912	913	908
25...	898	903	911	915	926	928	929	923
26...	984	003	031	057	077	088	094	095
27...	106	102	107	112	115	117	118	096
28...	907	905	899	890	881	875	849	840
29...	716	729	754	764	767	770	766	758
30...	879	889	898	909	927	930	917	899
31...	593	595	618	630	647	666	689	701

DATE.	REMARKS.
Aug. 22.	Clear.
" 23.	Clear to 16*h*.; changeable; wind N.
" 24.	Changeable; wind S.
" 25.	Changeable; wind S. E.
" 26.	Changeable; high wind N.
" 27.	Changeable; high wind S.
" 28.	Changeable; wind S.
" 29.	Changeable; wind S.
" 30.	Changeable; rain; fall of water 0^{in}.40; wind W.
" 31.	Cloudy; rain; fall of water 0^{in}.05; wind W.

TYPO-BAROGRAPH.

September, 1868.

Date.	0h.	1h.	2h.	3h.	4h.	5h.	6h.	7h.
1...	29.706	704	707	723	736	749	752	747
2...	29.954	950	945	940	939	939	934	937
3...	30.101	094	089	086	073	059	054	050
4...	29.916	904	891	870	865	852	838	842
5...	29.780	775	755	734	732	736	737	746
6...	29.840	830	818	818	808	802	802	802
7...	29.609	602	617	621	625	670	705	755
8...	29.928	918	885	865	850	849	834	829
9...	29.727	726	727	714	712	717	726	742
10...	29.795	791	771	754	746	746	750	763
11...	29.891	897	883	877	873	872	876	898
12...	29.908	886	861	829	819	800	789	778
13...	29.726	721	711	707	708	712	729	780
14...	29.902	905	908	911	914	917	920	922
15...	29.919	885	878	872	854	837	814	816
16...	29.632	648	664	680	703	732	743	789
17...	29.988	969	961	962	963	967	986	009
18...	30.208	198	178	163	160	160	160	168
19...	30.253	227	200	178	159	141	117	120
20...	29.834	805	795	775	755	742	736	736
21...	29.959	948	924	908	901	897	897	905
22...	29.931	904	876	845	838	828	820	839
23...	29.758	765	767	779	800	815	863	901
24...	30.145	144	119	082	075	078	063	051
25...	29.739	726	713	700	691	682	679	674
26...	29.972	962	956	954	943	944	944	945
27...	29.851	842	819	801	789	789	785	778
28...	29.668	650	647	649	658	668	691	720
29...	29.841	821	811	814	827	847	872	889
30...	29.864	821	812	817	803	794	803	820

Date.	Remarks.
Sept. 1.	Changeable; wind W.
" 2.	Cloudy; wind W.
" 3.	Rain; fall of water $0^{in}.87$; wind S.
" 4.	Rain; fall of water $0^{in}.27$; wind N. W.
" 5.	Clear.
" 6.	Cloudy; rain; fall of water $0^{in}.97$; wind W.
" 7.	Rain; gale from S.
" 8.	Cloudy; wind S.
" 9.	Rain; cloudy; fall of water $0^{in}.20$; wind S.
" 10.	Rain; fall of water $1^{in}.00$; wind S.

TYPO-BAROGRAPH.

SEPTEMBER, 1868.

DATE.	8h.	9h.	10h.	11h.	12h.	13h.	14h.	15h.
1...	777	810	821	825	834	843	854	867
2...	965	979	992	004	017	025	040	045
3...	054	061	064	068	060	033	022	013
4...	850	843	832	805	791	783	783	770
5...	778	797	807	807	807	822	824	824
6...	800	794	786	776	749	725	708	674
7...	760	812	814	818	854	862	874	901
8...	833	837	834	828	819	803	785	780
9...	753	765	770	779	783	780	780	780
10...	771	788	799	804	802	788	786	791
11...	906	915	918	920	920	913	907	910
12...	781	783	781	783	772	762	748	735
13...	810	841	857	864	866	869	872	875
14...	924	927	929	932	934	935	935	935
15...	835	831	836	825	799	772	730	732
16...	812	841	863	866	897	915	926	925
17...	045	081	101	122	128	131	139	151
18...	174	196	210	235	242	242	240	239
19...	126	127	113	098	086	076	044	010
20...	732	733	741	745	764	782	806	818
21...	922	943	961	963	959	960	953	948
22...	846	845	849	839	808	809	803	797
23...	946	946	966	986	006	026	046	066
24...	049	049	976	962	930	920	883	855
25...	677	658	655	659	657	712	748	778
26...	947	944	945	952	952	952	937	928
27...	778	768	762	756	754	734	722	720
28...	742	760	771	776	777	783	784	779
29...	885	891	897	908	928	958	953	954
30...	839	879	880	889	913	936	957	986

DATE. REMARKS.

Sept. 11. Heavy shower at 7 P. M.; rain; fall of water $1^{in}.60$; wind N.

" 12. Cloudy; wind S.

" 13. Cloudy; wind N. W.

" 14. Clear.

" 15. Clear; rain; fall of water $0^{in}.10$; gale from S.

" 16. High wind from W.; clear; cold.

" 17. Clear; wind W.

" 18. Clear; cloudy; wind S.

" 19. Cloudy; rain; wind S.

" 20. Rain; clear; fall of water $0^{in}.47$; wind W.

TYPO-BAROGRAPH.

September, 1868.

Date.	16*h.*	17*h.*	18*h.*	19*h.*	20*h.*	21*h.*	22*h.*	23*h.*
1...	875	893	913	931	933	948	950	954
2...	052	071	096	100	098	100	102	105
3...	008	005	987	991	984	978	959	942
4...	769	770	783	791	796	800	796	788
5...	824	831	840	860	870	870	871	856
6...	647	656	667	662	636	617	641	628
7...	911	911	943	950	960	967	962	960
8...	775	758	754	749	728	731	743	742
9...	780	784	789	797	807	804	801	798
10...	817	834	850	866	877	887	889	891
11...	912	922	924	924	924	927	928	922
12...	733	733	734	735	736	744	744	735
13...	878	881	884	887	890	893	896	899
14...	939	959	971	989	989	980	966	952
15...	706	682	659	640	610	603	616	617
16...	928	929	958	983	998	018	020	007
17...	161	175	186	202	216	227	229	220
18...	249	259	291	301	311	316	297	279
19...	000	987	970	955	939	923	886	865
20...	851	885	914	935	952	963	969	965
21...	948	948	958	969	966	964	959	940
22...	783	779	777	767	761	766	766	763
23...	086	109	131	153	151	149	147	146
24...	840	823	798	803	790	778	765	752
25...	804	840	841	915	940	962	969	972
26...	928	930	932	933	926	924	903	858
27...	722	724	706	700	694	702	696	680
28...	780	785	804	817	825	844	847	846
29...	964	956	974	978	964	958	925	895
30...	014	044	078	112	134	161	176	172

Date. **REMARKS.**

Sept. 21. Clear to 12*h.;* cloudy; wind S.
" 22. Rain; cloudy; fall of water $0^{in}.74$; wind S.
" 23. Cloudy; rain; wind S.
" 24. Rain; fall of water $0^{in}.48$; wind S.
" 25. Rain; cloudy; fall of water $0^{in}.24$.
" 26. Cloudy.
" 27. Changeable; wind W.
" 28. Clear to 16*h.;* wind W.
" 29. Clear.
" 30. Cloudy; wind S.

TYPO-BAROGRAPH.

October, 1868.

Date.	0h.	1h.	2h.	3h.	4h.	5h.	6h.	7h.
1...	30.169	157	143	137	133	133	139	147
2...	30.114	082	072	056	056	046	040	038
3...	20.032	014	004	002	004	010	030	038
4...	30.042	012	990	962	950	926	924	922
5...	29.584	552	516	484	470	450	450	440
6...	29.762	788	784	806	824	842	870	888
7...	29.878	850	834	814	794	790	790	774
8...	29.664	684	692	738	786	816	838	870
9...	30.110	082	060	052	046	042	046	050
10...	30.000	964	936	932	924	906	914	914
11...	29.735	721	701	697	707	731	749	765
12...	......	......	......	......	......	......	......	......
13...	......	......	......	......	......	......	......	......
14...	30.063	051	037	027	021	019	015	015
15...	29.897	877	863	853	837	831	825	819
16...	29.779	755	745	747	749	745	755	757
17...	29.991	013	027	059	095	139	175	207
18...	......	......	......	......	......	......	......	......
19...	......	......	......	......	......	......	......	......
20...	29.989	987	983	983	985	023	023	021
21...	29.981	975	949	909	910	905	903	903
22...	29.787	785	785	795	819	825	851	859
23...	30.263	265	265	269	273	279	291	297
24...	30.265	237	223	197	185	161	153	151
25...	29.955	923	905	895	875	869	869	867
26...	29.911	921	937	947	963	987	021	037

TYPO-BAROGRAPH.

OCTOBER, 1868.

DATE.	8*h*.	9*h*.	10*h*.	11*h*.	12*h*.	13*h*.	14*h*.	15*h*.
1...	154	161	159	147	137	135	135	137
2...	038	034	030	008	996	000	996	986
3...	050	078	082	082	082	080	074	078
4...	920	906	878	870	842	836	810	792
5...	440	428	418	440	458	470	480	500
6...	912	916	928	934	948	952	948	944
7...	760	748	720	716	696	680	642	634
8...	904	920	960	970	992	002	004	016
9...	068	070	072	070	064	048	036	036
10...	920	916	918	902	892	862	854	850
11...	781	819	839	835	841	843	835	825
12...	......	......	......	......	......	......	......	......
13...	......	......	......	......	......	......	......	......
14...	011	999	987	983	971	957	951	941
15...	817	815	791	787	781	779	761	767
16...	759	761	755	745	739	741	747	745
17...	221	235	251	255	261	267	279	279
18...	......	......	......	......	......	......	......	......
19...	......	......	......	......	......	......	......	......
20...	035	023	049	049	035	051	031	037
21...	891	867	863	849	825	815	797	795
22...	869	903	929	945	975	991	021	041
23...	297	303	305	307	311	313	313	309
24...	147	145	137	123	113	105	097	073
25...	863	855	833	827	821	805	795	793
26...	061	063	069	071	075	073	075	083
27...	832	809	784	769	733	724	701	701
28...	896	921	930	933	960	984	016	036
29...	260	280	288	313	332	350	368	373
30...	412	411	410	409	407	405	396	377
31...	825	773	732	685	672	665	658	651

DATE.	REMARKS.
Oct. 21.	Rain.
" 22.	Snow; rain and sleet; fall of water $0^{\text{in}}.50$.
" 23.	Clear.
" 24.	Changeable.

TYPO-BAROGRAPH.

October, 1868.

Date.	16*h*.	17*h*.	18*h*.	19*h*.	20*h*.	21*h*.	22*h*.	23*h*.
1...	139	139	139	141	147	147	143	135
2...	982	982	986	998	014	024	030	032
3...	082	090	102	116	118	114	100	078
4...	778	750	736	738	716	688	658	616
5...	522	556	594	624	656	684	712	730
6...	932	944	960	954	950	942	920	908
7...	632	624	618	604	602	600	602	642
8...	032	044	072	086	112	122	124	115
9...	050	048	038	050	048	040	030	012
10...	842	820	816	816	812	804	774	770
11...	831	851	859	873	893	899	897	897
12...	......	......	......	......	......	......	......	......
13...	......	......	......	......	......	......	......	......
14...	935	935	935	933	935	935	935	927
15...	767	775	785	793	817	815	815	795
16...	765	789	815	851	871	913	943	973
17...	279	291	293	293	303	305	287	263
18...	......	......	......	......	......	......	......	......
19...	......	......	......	......	......	......	......	......
20...	039	027	023	029	031	035	021	011
21...	781	781	781	785	787	789	789	785
22...	067	103	139	175	207	225	239	257
23...	309	305	303	314	319	323	301	287
24...	071	069	065	063	059	039	029	991
25...	801	807	827	841	873	893	903	911
26...	091	085	087	099	099	077	059	035
27...	689	675	667	650	617	623	641	655

TYPO-BAROGRAPH.

NOVEMBER, 1868.

DATE.	0*h*.	1*h*.	2*h*.	3*h*.	4*h*.	5*h*.	6*h*.	7*h*.
1...	29.549	538	526	536	567	557	568	576
2...	29.797	797	798	802	815	825	822	832
3...	......	......	......	......	......	......	......	......
4...	29.765	759	749	738	737	736	730	724
5...	29.585	577	574	574	583	608	633	647
6...	......	......	......	......	......	......	......	......
7...	......	......	......	......	......	......	......	......
8...	......	......	......	......	......	......	......	......
9...	29.809	795	785	788	796	811	823	826
10...	29.864	854	858	861	887	884	891	891
11...	29.727	717	704	706	709	727	750	756
12...	30.057	065	075	094	118	136	161	180
13...	30.120	092	072	051	051	057	064	075
14...	30.084	078	060	052	051	049	049	051
15...	30.162	155	138	138	147	150	163	174
16...	30.259	237	237	229	220	225	236	236
17...	30.086	066	035	024	009	002	997	973
18...	29.650	633	620	614	613	609	633	644
19...	29.693	685	674	674	674	675	682	683
20...	29.674	666	663	663	663	662	662	659
21...	29.610	609	589	575	575	575	577	576
22...	29.651	652	676	695	721	732	741	752
23...	29.940	932	926	923	925	928	919	922
24...	29.844	842	841	852	863	885	888	908
25...	29.942	934	917	912	882	862	856	823
26...	29.374	362	355	350	351	365	406	443
27...	29.873	879	882	885	889	903	918	931
28...	29.731	691	664	629	619	619	567	558
29...	29.462	454	453	452	451	450	449	448
30...	29.227	222	222	229	236	260	295	313

DATE. REMARKS.

Nov. 1. Snow; rain; fall of water $0^{in}.76$.

" 2. Cloudy; clear.

" 3. Clear.

" 4. Rain; fall of water $0^{in}.30$.

" 5. Wind W.

" 8. Rain; fall of water $0^{in}.20$.

" 9. Rain; fall of water $0^{in}.10$.

" 10. Rain; fall of water $0^{in}.45$.

" 11. Cloudy; snow squall; wind W.

TYPO-BAROGRAPH.

NOVEMBER, 1868.

DATE.	8*h*.	9*h*.	10*h*.	11*h*.	12*h*.	13*h*.	14*h*.	15*h*.
1...	567	572	574	572	576	577	613	630
2...	835	839	840	840	836	837	838	839
3...	......	......	......	......	......	......	......	......
4...	718	711	704	697	682	682	642	634
5...	688	702	723	736	768	783	809	823
6...	......	......	......	......	......	......	......	......
7...	......	......	......	......	......	......	......	......
8...	......	......	......	......	......	......	......	......
9...	854	868	886	896	908	899	907	897
10...	880	858	846	819	789	783	773	763
11...	777	797	815	831	839	844	854	864
12...	181	189	191	195	197	201	202	215
13...	082	083	085	092	094	088	094	097
14...	067	086	097	112	119	119	134	135
15...	178	183	184	186	190	193	197	205
16...	234	247	232	217	216	211	209	192
17...	971	960	955	933	905	889	851	790
18...	644	652	654	659	670	670	682	686
19...	683	692	685	683	686	688	688	685
20...	657	653	643	619	626	623	621	619
21...	577	589	589	589	591	588	585	582
22...	768	790	799	813	827	831	842	852
23...	927	927	918	905	903	893	887	873
24...	928	948	967	969	971	973	976	979
25...	811	811	801	801	784	765	739	685
26...	486	524	570	587	632	651	671	698
27...	932	932	931	919	911	903	895	887
28...	554	533	524	509	487	477	466	464
29...	438	413	404	377	359	343	327	312
30...	347	369	370	370	372	375	389	392

DATE.	REMARKS.
Nov. 12.	Cloudy to 12*h*.; clear.
" 13.	Clear.
" 14.	Changeable.
" 15.	Changeable.
" 16.	Changeable.
" 17.	Cloudy; snow and rain; fall of water $0^{in}.50$.
" 19.	Cloudy.
" 20.	Cloudy.
" 21.	Cloudy.

TYPO-BAROGRAPH.

NOVEMBER, 1868.

DATE.	16h.	17h.	18h.	19h.	20h.	21h.	22h.	23h.
1...	650	680	709	732	756	771	780	796
2...	841	843	845	847	849	840	831	822
3...	......	......	......	......	......	......	......	......
4...	608	606	595	590	600	597	593	589
5...	837	857	887	924	931	941	960	973
6...	......	......	......	......	......	......	......	......
7...	......	......	......	......	......	......	......	......
8...	......	......	......	......	......	......	......	......
9...	897	895	888	887	893	893	881	867
10...	733	736	701	704	704	713	720	724
11...	872	894	912	944	976	015	032	054
12...	194	182	182	184	186	173	161	132
13...	091	084	093	101	116	127	115	108
14...	132	152	160	171	188	195	191	180
15...	209	220	247	260	277	286	290	287
16...	182	181	170	169	160	139	136	119
17...	770	751	732	713	694	675	674	652
18...	686	683	692	696	689	698	698	699
19...	685	685	682	685	689	693	690	682
20...	618	617	615	618	621	624	624	617
21...	578	588	598	610	629	648	651	652
22...	853	873	889	909	928	938	949	951
23...	864	858	849	853	857	863	866	856
24...	994	004	006	982	992	995	995	997
25...	643	614	581	568	554	496	450	410
26...	714	748	786	804	847	853	866	869
27...	879	871	863	855	847	818	789	760
28...	456	461	467	472	478	473	467	462
29...	297	282	267	252	244	238	237	233
30...	393	393	398	404	422	435	448	461

DATE. **REMARKS.**

Nov. 22. Cloudy.
" 23. Changeable.
" 24. Changeable.
" 25. Cloudy; rain; fall of water $0^{in}.10$.
" 26. Rain; fall of water $0^{in}.76$.
" 27. Cloudy.
" 28. Rain.
" 29. Cloudy; snow.
" 30. Cloudy.

TYPO-BAROGRAPH.

DECEMBER, 1868.

DATE.	0*h*.	1*h*.	2*h*.	3*h*.	4*h*.	5*h*.	6*h*.	7*h*.
1...	......	......	......	......	......	......	......	.....
2...	......	......	......	......	......	......	......	......
3...	30.057	064	071	077	083	091	095	115
4...	30.057	045	029	011	003	997	973	949
5...	29.773	761	755	757	763	779	791	799
6...	29.993	993	995	005	025	031	039	039
7...	29.583	485	401	307	151	045	985	901
8...	29.039	043	041	063	073	075	105	111
9...	29.565	585	603	631	655	677	697	717
10...	29.749	737	729	731	751	759	767	769
11...	29.759	759	755	675	639	611	605	603
12...	29.795	805	823	855	879	899	918	903
13...	30.153	135	121	125	127	119	133	143
14...	29.891	863	839	833	815	775	753	753
15...	29.977	983	981	987	013	037	033	037
16...	29.779	741	703	645	615	589	575	561
17...	29.109	089	079	073	071	077	081	095
18...	29.475	499	525	529	625	697	707	787
19...	30.297	301	297	313	313	307	323	327
20...	29.835	795	743	713	683	675	661	665
21...	29.569	555	557	591	593	613	621	673
22...	29.887	883	883	891	903	903	909	915
23...	29.749	755	757	789	792	821	832	865
24...	29.703	739	737	735	745	751	755	763
25...	29.683	671	657	657	655	659	673	683
26...	30.154	161	167	173	192	194	233	265
27...	30.279	259	235	232	225	191	189	183

TYPO-BAROGRAPH.

DECEMBER, 1868.

DATE.	8h.	9h.	10h.	11h.	12h.	13h.	14h.	15h.
1...	......	... ..	......	......	......	......	......	......
2...	......	......	... ..	......	......	......	......	......
3...	147	159	149	131	111	107	121	109
4...	947	951	953	929	915	915	875	869
5...	819	829	833	835	837	839	859	871
6...	035	035	033	027	007	991	962	951
7...	827	759	771	761	789	795	821	837
8...	135	183	187	187	183	203	265	302
9...	723	721	721	717	717	719	719	727
10...	779	789	789	785	783	769	767	769
11...	591	585	583	577	559	559	565	582
12...	988	991	993	029	031	037	061	075
13...	133	133	125	111	081	069	065	065
14...	749	731	711	711	711	709	715	743
15...	039	063	051	025	015	023	985	985
16...	545	521	515	469	433	393	395	379
17...	109	113	117	121	121	119	121	149
18...	811	829	849	895	915	937	025	047
19...	319	305	301	275	265	261	205	195
20...	663	649	641	629	629	627	613	593
21...	681	707	719	727	735	751	787	799
22...	921	921	921	909	879	873	865	853
23...	867	862	865	865	863	835	825	823
24...	771	781	781	779	761	755	755	751
25...	692	703	715	717	735	751	807	851
26...	279	293	301	303	305	303	302	311
27...	161	145	131	113	088	063	061	001
28...	185	191	187	183	159	155	143	112
29...	841	865	872	907	911	988	025	063
30...	189	209	195	179	152	153	153	153
31...	127	135	159	165	167	169	178	191

DATE.	REMARKS.
Dec. 12.	Changeable.
“ 13.	Cloudy.
“ 14.	Snow.
“ 15.	Changeable.
“ 16.	Cloudy.
“ 17.	Cloudy.
“ 18.	Clear.
“ 19.	Clear; cloudy.
“ 20.	Rain; changeable; fall of water $0^{in}.80$.
“ 21.	Cloudy.

TYPO-BAROGRAPH.

DECEMBER, 1868.

DATE.	16*h*.	17*h*.	18*h*.	19*h*.	20*h*.	21*h*.	22*h*.	23*h*.
1...	......	......	......	......	......	......	......	......
2...	......	......	......	......	......	......	......	......
3...	109	113	107	095	093	099	099	081
4...	845	821	821	807	807	803	805	789
5...	875	883	923	957	987	992	000	991
6...	922	895	863	837	771	753	713	703
7...	869	879	917	953	981	998	017	035
8...	338	375	423	473	497	523	549	555
9...	723	717	712	721	741	749	759	761
10...	763	753	771	773	779	785	791	791
11...	591	593	615	651	711	755	789	793
12...	072	097	103	119	127	155	171	173
13...	035	993	991	991	979	967	954	941
14...	757	785	799	845	897	925	949	955
15...	903	925	895	885	867	863	837	833
16...	347	315	307	285	269	259	231	174
17...	157	175	213	265	315	319	432	469
18...	067	095	124	153	182	211	240	268
19...	143	127	095	039	021	981	973	929
20...	563	553	543	535	533	549	577	577
21...	805	819	829	855	873	891	907	905
22...	801	779	755	753	737	727	717	727
23...	813	783	757	759	755	761	769	783
24...	747	741	741	743	741	741	745	719
25...	883	911	956	993	032	072	117	147
26...	313	307	313	313	311	314	321	313
27...	035	035	033	035	039	059	068	073
28...	111	067	041	021	967	942	913	877
29...	072	085	107	132	121	191	203	197
30...	148	143	146	149	157	161	163	159
31...	193	193	198	202	198	195	211	215

DATE.	REMARKS.
Dec. 22.	Cloudy; snow; fall of water $0^{in}.10$
" 23.	Changeable; clear.
" 24.	Changeable.
" 25.	Changeable.
" 26.	Changeable.
" 27.	Cloudy; snow; fall of water $0^{in}.17$.
" 28.	Cloudy; snow.
" 29.	Cloudy.
" 30.	Changeable.

TYPO-BAROGRAPH.

January, 1869.

Date.	0h.	1h.	2h.	3h.	4h.	5h.	6h.	7h.
1...	30.094	092	084	088	072	068	066	055
2...	30.048	044	032	002	980	979	948	899
3...	29.896	898	906	908	908	916	924	926
4...	29.854	803	776	783	778	774	772	772
5...	29.388	376	376	386	393	418	432	436
6...	29.734	739	703	702	726	743	762	780
7...	29.892	858	838	833	836	826	828	832
8...	......	......	......	......	......	......	......	......
9...	......	......	......	......	......	......	......	......
10...	......	......	......	......	......	......	......	......
11...	......	......	......	......	......	......	......	......
12...	......	......	......	......	......	......	......	......
13...	......	......	......	......	......	......	......	......
14...	29.930	900	870	863	862	858	848	848
15...	29.613	576	550	553	552	550	548	542
16...	29.880	878	881	902	932	943	983	012
17...	30.032	028	017	014	002	010	012	029
18...	30.110	096	078	074	072	060	054	048
19...	29.884	869	856	852	850	830	826	830
20...	29.452	424	414	416	420	456	496	542
21...	29.574	546	523	502	493	478	468	470
22...	29.933	922	910	910	910	916	923	940
23...	29.492	502	486	470	464	462	456	463
24...	29.484	460	446	420	414	398	383	358
25...	29.652	652	659	670	708	736	763	805
26...	29.916	904	902	906	900	908	930	938
27...	29.941	898	861	844	824	813	789	782
28...	29.710	719	732	742	778	812	838	868
29...	29.910	880	856	810	800	780	760	746
30...	29.352	340	330	334	338	340	390	410
31...	29.664	660	660	689	710	740	760	790

Date. **REMARKS.**

Jan. 1. Snow; fall of water $1^{in}.00$; wind N.
" 2. Cloudy; snow; fall of water $0^{in}.20$; wind N.
" 3. Cloudy; wind S.
" 4. Rain; fall of water $0^{in}.70$; wind S.
" 5. Cloudy; wind S.
" 6. Changeable; wind W.
" 7. Clear; wind S.
" 8. Changeable; wind S.
" 9. Cloudy; rain; fall of water $0^{in}.10$; wind S.
" 10. Clear; cloudy; wind W.
" 11. Cloudy; wind N.

TYPO-BAROGRAPH.

January, 1869.

Date.	8*h*.	9*h*.	10*h*.	11*h*.	12*h*.	13*h*.	14*h*.	15*h*.
1...	066	066	066	068	068	064	062	062
2...	898	896	894	892	882	882	876	836
3...	923	922	934	938	938	939	952	956
4...	772	773	746	744	744	737	722	655
5...	445	449	451	476	479	498	492	516
6...	810	822	840	843	846	836	850	858
7...	834	848	851	856	864	868	872	876
8...	......	......	......	......	......	......	......	......
9...	......	......	......	......	......	......	......	......
10...	......	......	......	......	......	......	......	......
11...	......	......	......	......	......	......	......	......
12...	......	......	......	......	......	......	......	......
13...	......	......	......	......	......	......	......	......
14...	852	849	818	788	763	742	752	756
15...	550	552	554	562	557	578	612	626
16...	015	020	018	019	018	020	023	036
17...	042	056	058	064	079	083	088	104
18...	033	026	016	010	994	982	981	978
19...	839	792	780	752	723	670	658	620
20...	580	608	623	632	654	663	688	696
21...	464	463	520	550	590	620	686	736
22...	946	944	934	912	906	894	874	854
23...	468	482	494	498	500	498	500	500
24 ..	350	348	333	332	336	334	338	352
25...	826	856	873	894	896	900	904	903
26...	946	963	981	999	010	013	008	008
27...	752	738	734	710	694	668	664	662
28...	896	902	909	909	906	908	910	920
29...	742	730	706	692	680	616	570	536
30...	440	456	475	491	510	530	540	550
31...	814	833	860	870	888	904	934	952

Date.	Remarks
Jan. 12.	Cloudy; wind N.; snow.
“ 13.	Clear; wind N.
“ 14.	Clear; wind S.
“ 15.	Cloudy; wind S.
“ 16.	Changeable; wind W.
“ 17.	Cloudy; snow; wind W.
“ 18.	Cloudy; wind N.
“ 19.	Cloudy; wind N.
“ 20.	Changeable; wind W.
“ 21.	Cloudy; wind W.

TYPO-BAROGRAPH.

JANUARY, 1869.

DATE.	16h.	17h.	18h.	19h.	20h.	21h.	22h.	23h.
1...	062	058	058	041	048	050	044	040
2...	835	830	828	823	836	843	843	858
3...	956	952	946	944	940	940	940	918
4...	492	463	463	436	423	435	412	420
5...	519	540	593	630	638	645	658	659
6...	862	863	870	883	896	905	910	914
7...	876	892	908	924	940	956	972	988
8...	......	......	......	......	......	......	......	......
9...	......	......	......	......	......	......	......	......
10...	......	......	......	......	......	......	......	......
11...	......	......	......	......	......	......	......	......
12...	......	......	......	......	......	......	......	......
13...	......	......	......	......	......	......	......	......
14...	754	712	693	696	696	696	660	653
15...	642	663	716	740	781	832	863	878
16...	026	010	011	016	023	056	058	056
17...	105	109	109	110	113	136	136	132
18...	950	942	941	940	939	937	936	906
19...	596	568	550	540	538	530	503	480
20...	690	668	661	672	664	665	654	622
21...	766	782	803	824	864	903	914	936
22...	806	763	746	724	694	665	624	583
23...	500	494	494	500	506	524	523	504
24...	358	373	430	496	540	584	620	645
25...	903	902	912	930	925	928	940	944
26...	005	992	992	990	988	986	983	978
27...	656	642	646	652	666	668	694	701
28...	908	910	920	923	936	938	938	924
29...	468	456	418	416	410	404	382	380
30...	544	552	560	581	592	620	653	661
31...	989	035	061	083	122	152	184	202

DATE. **REMARKS.**

Jan. 22. Clear; wind W.
" 23. Clear; wind S.
" 24. Cloudy; wind S.
" 25. Clear; wind N. W.
" 26. Cloudy; wind W.
" 27. Cloudy; wind S.
" 28. Cloudy; wind W.
" 29. Changeable; wind W.
" 30. Cloudy; wind N.
" 31. Changeable; wind W.

TYPO-BAROGRAPH.

FEBRUARY, 1869.

DATE.	0*h*.	1*h*.	2*h*.	3*h*.	4*h*.	5*h*.	6*h*.	7*h*.
1...	......	......	......	... ..	......	......	......	......
2...	......	......	......	......	......	......	......	......
3...	......	......	......	......	......	......	......	......
4...	28.890	906	936	987	004	005	111	134
5...	29.459	476	500	532	548	596	636	666
6...	29.904	874	870	870	872	874	890	896
7...	30.226	230	234	252	267	276	296	298
8...	30.157	135	106	072	066	052	040	034
9...	30.006	980	956	929	926	908	908	906
10...	29.826	826	812	812	812	808	819	826
11...	29.770	768	772	774	796	817	876	912
12...	30.036	026	022	018	002	996	992	992
13...	29.734	710	690	678	678	669	686	726
14...	30.016	025	003	981	960	952	952	934
15...	29.410	368	326	320	324	324	330	352
16...	29.338	338	338	342	346	356	379	411
17...	29.370	354	316	292	289	258	254	248
18...	29.069	082	086	090	128	169	216	256
19...	29.218	260	302	344	387	430	473	516
20...	29.836	814	806	794	790	786	786	800
21...	29.890	854	828	792	766	754	716	730
22...	29.689	690	686	686	687	676	699	720
23...	28.968	844	820	850	882	978	098	181
24...	29.846	818	810	815	839	888	916	919
25...	30.256	229	210	188	172	166	154	146
26...	29.798	706	679	650	598	564	532	512
27...	29.408	410	430	438	490	526	570	610
28...	30.012	006	004	006	009	010	012	018

DATE. REMARKS.

Feb. 1. Clear; wind W.
" 2. Changeable; snow; fall of water $0^{in}.70$; wind N.
" 3. Cloudy; rain; snow; thunder and lightning; fall of water $0^{in}.50$.
" 4. Cloudy; wind N. W.
" 5. Changeable; wind W.
" 6. Changeable; wind S. W.
" 7. Clear; wind W.
" 8. Cloudy; wind N.
" 9. Cloudy; wind N.

TYPO-BAROGRAPH.

FEBRUARY, 1869.

DATE.	8*h*.	9*h*.	10*h*.	11*h*.	12*h*.	13*h*.	14*h*.	15*h*.
1...	......	......	......	......	... ..	......	......	......
2...	......	......	......	......	......	......	......	......
3...	......	......	......	......	......	......	......	......
4...	165	174	186	189	190	194	200	204
5...	715	732	752	776	787	789	730	734
6...	898	908	909	914	915	918	948	966
7...	306	307	311	316	317	316	310	304
8...	045	035	038	032	032	032	030	031
9...	904	892	890	888	888	891	896	822
10...	830	830	828	830	830	830	830	830
11...	934	967	978	994	998	008	010	010
12...	971	964	950	942	917	892	867	842
13...	730	728	758	757	808	850	866	875
14...	918	909	906	854	830	816	810	804
15...	352	348	332	329	322	298	297	297
16...	423	433	434	449	458	468	476	478
17...	240	210	204	170	164	136	124	119
18...	286	298	314	316	320	326	318	309
19...	559	602	645	688	731	774	796	804
20...	799	816	832	836	848	846	848	850
21...	696	696	688	669	649	648	609	590
22...	689	674	670	656	614	594	586	478
23...	219	296	367	428	500	556	608	648
24...	980	012	048	068	116	128	150	166
25...	132	128	128	108	088	086	029	994
26...	479	446	418	410	390	402	400	379
27...	652	657	690	697	728	762	778	806
28...	039	050	062	070	062	004	049	052

DATE.	REMARKS.
Feb. 10.	Cloudy; snow and rain; fall of water $0^{in}.22$; wind W.
" 11.	Cloudy; wind S. W.
" 12.	Changeable; wind S.
" 13.	Cloudy; wind S.
" 14.	Cloudy; rain; fall of water $0^{in}.30$; wind N.
" 15.	Cloudy; wind W.
" 16.	Cloudy; wind W.
" 17.	Cloudy; snow; fall of water $0^{in}.10$; wind N.
" 18.	Cloudy; snow; fall of water $0^{in}.03$; wind S.
" 19.	Cloudy; snow; wind S. W.

TYPO-BAROGRAPH.

February, 1869.

Date.	16*h*.	17*h*.	18*h*.	19*h*.	20*h*.	21*h*.	22*h*.	23*h*.
1...	......	......	......	......	......	......	......	......
2...	......	......	......	......	......	......	......	......
3...	......	......	......	......	......	......	......	......
4...	220	230	268	298	329	379	419	454
5...	746	866	868	870	896	912	912	910
6...	988	024	035	042	042	045	120	216
7...	302	298	298	298	286	262	238	208
8...	028	016	020	025	036	052	046	030
9...	824	812	812	814	826	829	828	827
10...	831	832	830	826	824	823	815	790
11...	018	036	036	048	050	052	044	042
12...	817	792	786	778	792	788	779	768
13...	892	928	952	969	996	005	012	014
14...	802	708	614	560	547	534	464	434
15...	300	298	298	314	314	316	326	336
16...	472	468	468	460	452	450	409	420
17...	048	034	014	008	010	026	050	056
18...	259	264	260	250	252	248	242	216
19...	800	812	818	828	832	812	832	840
20...	850	855	868	882	916	910	899	898
21...	578	577	600	639	649	684	690	698
22...	412	376	367	250	219	138	060	008
23...	668	700	737	791	829	854	854	852
24...	170	196	209	210	246	260	268	274
25...	970	956	940	918	920	886	852	838
26...	376	369	374	376	372	372	390	399
27...	848	886	887	916	958	968	006	010

TYPO-BAROGRAPH.

MARCH, 1869.

DATE.	0h.	1h.	2h.	3h.	4h.	5h.	6h.	7h.
1...	29.955	917	889	879	797	837	829	822
2...	29.641	611	601	593	585	589	601	613
3...	29.845	847	849	862	867	871	881	882
4...	29.681	672	683	709	733	799	811	862
5...	29.921	881	859	839	833	801	799	795
6...	29.524	521	517	521	551	589	621	669
7...	30.189	187	177	165	155	147	147	155
8...	30.009	992	995	991	983	987	997	003
9...	30.067	061	041	029	007	003	997	003
10...	29.648	562	563	495	426	357	289	263
11...	29.907	903	885	885	876	867	869	883
12...	29.809	792	769	727	717	688	673	679
13...	29.619	617	611	625	631	639	650	675
14...	29.549	513	457	449	443	501	579	675
15...	......	......	......	......	......	......	......	......
16...	30.174	158	128	114	108	100	092	094
17...	29.986	964	948	932	924	914	914	920
18...	30.066	046	036	032	032	038	048	066
19...	30.046	012	988	956	917	904	858	840
20...	29.399	398	390	397	416	436	466	486
21...	30.044	062	072	080	093	114	150	186
22...	30.370	356	318	316	292	281	246	223
23...	29.888	872	838	822	828	828	834	844
24...	29.966	986	997	024	028	030	056	090
25...	30.250	239	226	213	200	192	189	188
26...	30.046	030	989	950	890	868	838	832
27...	29.732	740	748	778	803	812	826	830
28...	29.932	928	914	906	898	892	904	894
29...	29.744	722	696	667	626	586	558	514
30...	29.229	220	210	200	200	212	226	234
31...	29.433	436	450	478	506	538	564	590

DATE.	REMARKS.
March 1.	**Changeable; wind N.**
" 2.	**Cloudy; wind S.**
" 3.	**Cloudy; wind S.; rain.**
" 4.	**Clear; wind N. W.**
" 5.	**Changeable; wind S.**
" 6.	**Changeable; wind W.**
" 7.	**Changeable; wind S. W.**
" 8.	**Cloudy; wind S.**
" 9.	**Changeable; wind S.**
" 10.	**Cloudy; wind W.**
" 11.	**Cloudy; wind N. W.; snow.**

TYPO-BAROGRAPH.

MARCH, 1869.

DATE.	8*h*.	9*h*.	10*h*.	11*h*.	12*h*.	13*h*.	14*h*.	15*h*.
1...	829	827	819	801	795	785	761	749
2...	629	641	645	645	649	673	675	673
3...	903	907	909	903	877	863	841	825
4...	869	867	877	881	889	912	921	921
5...	765	767	767	763	741	713	672	639
6...	685	715	759	790	832	881	919	953
7...	147	142	131	121	120	085	049	027
8...	003	995	987	983	969	962	963	965
9...	003	998	993	987	971	945	917	883
10...	231	197	183	259	335	413	569	625
11...	887	885	882	879	869	867	843	809
12...	671	685	679	651	623	605	560	520
13...	680	683	689	711	723	723	721	717
14...	712	741	751	749	711	749	747	761
15...	......	......	......	......	......	......	......	......
16...	090	084	080	076	074	074	070	072
17...	928	932	946	956	958	960	968	972
18...	074	088	090	088	088	086	088	093
19...	822	794	772	730	690	642	594	553
20...	530	564	600	632	674	712	750	793
21...	214	242	252	292	320	332	332	334
22...	208	207	172	118	090	044	013	962
23...	864	890	914	918	922	918	918	916
24...	116	126	130	160	158	162	172	174
25...	188	187	186	172	170	170	162	156
26...	804	772	730	688	668	676	654	662
27...	856	863	870	888	892	909	910	912
28...	890	880	826	844	866	868	866	866
29...	490	464	416	398	368	344	326	318
30...	238	250	258	256	272	276	280	286
31...	608	612	624	636	648	656	670	684

DATE.	REMARKS.
March 12.	Cloudy; wind S.
" 13.	Changeable; wind S.
" 14.	Cloudy; wind W.
" 15.	Changeable; rain; wind W.
" 16.	Clear; wind S.
" 17.	Changeable; wind W.
" 18.	Clear; wind S.
" 19.	Changeable; rain; wind S.
" 20.	Changeable; wind W.
" 21.	Clear; wind N. W.

TYPO-BAROGRAPH.

MARCH, 1869.

DATE.	16*h*.	17*h*.	18*h*.	19*h*.	20*h*.	21*h*.	22*h*.	23*h*.
1...	725	719	709	687	687	684	681	662
2...	681	689	712	731	762	787	803	829
3...	785	765	747	729	729	727	719	707
4...	919	923	933	949	959	961	957	943
5...	632	611	607	599	581	565	553	529
6...	991	013	035	058	080	115	150	185
7...	003	002	002	003	005	005	005	003
8...	967	992	009	029	039	047	049	049
9...	883	873	863	841	837	789	729	679
10...	685	729	761	803	845	881	912	917
11...	807	807	810	825	832	833	833	827
12...	519	519	525	538	552	593	622	625
13...	709	707	689	679	685	657	639	573
14...	769	761	755	762	801	813	832	845
15...	......	......	......	... ..	......	......	......	......
16...	074	076	078	078	072	060	044	016
17...	976	988	998	012	028	044	052	074
18...	094	106	107	116	109	109	078	068
19...	516	488	480	473	428	419	410	402
20...	812	868	912	946	960	996	026	034
21...	359	374	377	403	412	436	408	398
22...	954	948	954	952	933	932	918	908
23...	926	926	928	950	950	932	950	954
24...	188	202	210	248	280	282	294	288
25...	152	148	138	130	130	118	104	076
26...	670	678	686	694	716	718	726	730
27...	892	904	932	956	964	974	980	956
28...	850	838	832	810	810	798	774	764
29...	296	294	288	282	264	256	247	238
30...	296	318	334	356	374	392	402	410
31...	698	711	724	737	750	754	758	742

DATE. REMARKS.

March 22. Cloudy; rain; wind N.
" 23. Cloudy; rain; wind S.
" 24. Changeable; wind S.
" 25. Changeable; wind N.
" 26. Cloudy; rain; wind S.
" 27. Cloudy; wind N.
" 28. Cloudy; wind S. W.
" 29. Cloudy; wind N.; rain.
" 30. Cloudy; wind W.; rain.
" 31. Changeable; wind W.

TYPO-BAROGRAPH.

MAY, 1869.

ATE.	0*h*.	1*h*.	2*h*.	3*h*.	4*h*.	5*h*.	6*h*.	7*h*.
1...	29.724	708	702	682	662	620	602	568
2...	29.204	174	170	166	162	158	154	149
3...	29.180	190	210	224	254	274	294	312
4...	29.388	402	402	412	426	446	456	486
5...	29.710	708	704	706	710	712	723	742
6...	29.818	802	790	784	788	790	800	804
7...	29.776	764	752	750	750	754	760	772
8...	29.770	754	745	729	721	703	701	707
9...	29.648	628	620	618	616	618	618	628
10...	29.746	736	722	714	712	710	708	722
11...	29.672	644	620	598	582	574	574	574
12...	29.577	553	531	515	509	493	495	509
13...	29.520	502	492	504	504	466	436	434
14...	29.253	243	227	209	193	187	189	191
15...	29.244	244	246	248	256	268	282	290
16...	29.268	234	218	216	254	260	260	276
17...	29.425	425	431	449	457	467	479	499
18...	29.624	620	618	620	622	624	628	638
19...	29.589	571	553	539	531	521	511	505
20...	29.631	630	641	646	654	678	690	698
21...	29.733	711	689	683	673	665	659	661
22...	29.585	571	565	555	545	541	563	579
23...	29.724	714	702	680	674	670	676	686
24...	29.756	746	743	723	717	715	709	709
25...	29.720	692	676	666	656	628	648	654
26...	29.554	532	507	511	537	543	573	579
27...	29.963	945	933	929	925	905	899	921
28...	29.979	961	937	929	923	877	899	893
29...	29.805	805	809	811	833	847	851	871
30...	29.885	884	884	884	847	836	835	842
31...	29.735	733	731	707	705	690	676	677

DATE. REMARKS.

May 1. Cloudy; rain and snow; fall of water $0^{in}.82$; wind W.
" 2. Snow and rain; cloudy; fall of water $0^{in}.12$; wind W.
" 3. Cloudy; wind N. W.
" 4. Cloudy; wind N. W.
" 5. Clear; wind N. W.
" 6. Cloudy; clear; wind S. E.
" 7. Changeable; wind N. W.
" 8. Changeable; aurora borealis; wind W.
" 9. Cloudy; clear; aurora; wind W.
" 10. Clear; wind S.
" 11. Clear; wind S. W.

TYPO-BAROGRAPH.

April, 1869.

Date.	0*h.*	1*h.*	2*h.*	3*h.*	4*h.*	5*h.*	6*h.*	7*h.*
1...	29.748	726	712	694	693	687	677	678
2...	29.578	572	548	538	530	520	524	534
3...	29.627	632	637	642	658	666	686	692
4...	29.576	566	560	560	563	566	574	588
5...	29.448	438	406	398	392	386	388	394
6...	29.368	372	400	404	416	432	484	514
7...	29.560	538	524	532	574	606	614	636
8...	29.608	604	608	620	642	670	688	706
9...	29.718	722	720	720	721	730	746	764
10...	29.812	802	798	790	786	796	814	832
11...	29.792	776	768	756	752	750	756	766
12...	29.741	737	723	719	717	719	721	727
13...	29.749	739	735	735	727	741	745	753
14...	29.867	865	861	857	869	879	909	925
15...	30.069	059	035	015	005	004	003	005
16...	29.961	923	899	863	829	819	795	787
17...	29.565	555	587	601	617	631	641	655
18...	29.757	749	739	723	711	707	717	711
19...	29.461	455	426	418	414	422	440	454
20...	29.458	446	426	410	362	356	344	342
21...	29.316	344	350	334	346	376	408	434
22...	29.860	876	898	920	924	948	932	958
23...	30.068	036	002	962	944	920	876	892
24...	29.706	688	684	690	684	668	666	664
25...	29.720	726	718	710	726	744	752	768
26...	29.688	664	646	638	642	658	662	670
27...	29.775	758	742	704	680	674	670	648
28...	29.640	626	612	594	574	566	548	550

TYPO-BAROGRAPH.

April, 1869.

Date.	8*h*.	9*h*.	10*h*.	11*h*.	12*h*.	13*h*.	14*h*.	15*h*.
1...	686	693	690	691	678	667	648	638
2...	556	568	554	542	540	526	522	526
3...	688	690	692	690	686	672	672	658
4...	590	588	580	568	552	530	520	510
5...	396	398	400	400	394	388	368	362
6...	552	590	591	598	598	600	602	606
7...	656	662	662	670	686	690	690	688
8...	724	730	724	722	726	718	714	712
9...	786	798	808	812	812	811	810	804
10...	838	842	842	843	844	845	846	847
11...	778	782	778	776	778	778	770	761
12...	749	755	753	751	751	745	741	739
13...	775	789	793	795	797	795	795	799
14...	949	959	983	991	017	027	031	043
15...	021	029	031	033	035	025	019	023
16...	781	775	763	749	735	711	705	677
17...	669	673	663	665	669	665	661	667
18...	717	713	699	699	669	653	635	599
19...	466	530	536	538	538	540	536	536
20...	336	322	294	284	282	230	224	204
21...	516	532	543	568	602	612	622	688
22...	968	990	996	008	022	032	032	046
23...	880	868	848	824	822	800	776	788
24...	672	678	690	706	706	694	680	678
25...	794	806	802	798	792	780	748	742
26...	682	690	708	708	714	708	716	730
27...	644	650	666	676	662	646	642	644
28...	552	560	550	546	544	526	530	546
29...	700	736	754	776	782	786	790	814
30...	808	830	820	828	822	816	820	830

Date. **REMARKS.**

April 11. Cloudy; wind N.
" 12. Cloudy; wind W.
" 13. Cloudy; wind W.
" 14. Changeable; clear; wind W.
" 15. Changeable; wind W.
" 16. Clear; rain; fall of water $0^{in}.30$; wind S. E.
" 17. Clear; wind S.
" 18. Clear; changeable; wind S. E.
" 19. Cloudy; rain; wind S.
" 20. Cloudy; rain; fall from 0*h*. 19th to 0*h*. 20th, $2^{in}.00$; wind S.

TYPO-BAROGRAPH.

April, 1869.

Date.	16h.	17h.	18h.	19h.	20h.	21h.	22h.	23h.
1...	616	616	630	634	648	674	640	600
2...	522	528	538	566	592	612	617	622
3...	654	652	640	628	628	614	602	590
4...	512	522	526	494	488	482	476	460
5...	356	354	358	366	373	380	376	372
6...	602	602	608	620	617	613	610	576
7...	684	684	692	686	680	676	656	634
8...	716	724	734	724	718	724	726	712
9...	804	812	828	828	820	830	838	834
10...	850	852	854	844	832	830	812	808
11...	764	764	766	774	778	778	771	764
12...	739	741	749	757	759	761	761	753
13...	804	809	829	843	847	857	867	869
14...	069	083	101	107	095	099	097	081
15...	025	029	027	027	005	993	993	985
16...	641	635	623	597	573	559	555	553
17...	683	717	749	759	761	753	759	757
18...	593	573	567	565	549	509	503	469
19...	536	518	518	522	508	494	498	468
20...	198	174	208	240	246	302	808	306
21...	710	732	754	776	798	810	824	838
22...	074	090	116	122	118	126	114	084
23...	764	764	782	774	762	754	745	724
24...	684	686	722	734	744	746	734	728
25...	744	750	752	754	730	742	742	708
26...	748	766	796	798	794	792	814	792
27...	642	640	650	666	664	666	663	660
28...	552	552	559	566	574	598	601	604
29...	810	812	832	852	846	846	834	830
30...	824	818	808	804	794	774	760	746

Date. **REMARKS.**

April 21. Rain; cloudy; high wind from W.
" 22. Clear; wind W.
" 23. Rain; cloudy; high wind S. E.
" 24. Changeable; wind S. E.
" 25. Cloudy; clear; high wind N. W.
" 26. Clear; wind W.
" 27. Cloudy; wind W.
" 28. Changeable; wind N. E.
" 29. Cloudy; clear; wind W.
" 30. Clear; cloudy; wind N. E.

TYPO-BAROGRAPH.

May, 1869.

Date.	0*h*.	1*h*.	2*h*.	3*h*.	4*h*.	5*h*.	6*h*.	7*h*.
1...	29.724	708	702	682	662	620	602	568
2...	29.204	174	170	166	162	158	154	149
3...	29.180	190	210	224	254	274	294	312
4...	29.388	402	402	412	426	446	456	486
5...	29.710	708	704	706	710	712	723	742
6...	29.818	802	790	784	788	790	800	804
7...	29.776	764	752	750	750	754	760	772
8...	29.770	754	745	729	721	703	701	707
9...	29.648	628	620	618	616	618	618	628
10...	29.746	736	722	714	712	710	708	722
11...	29.672	644	620	598	582	574	574	574
12...	29.577	553	531	515	509	493	495	509
13...	29.520	502	492	504	504	466	436	434
14...	29.253	243	227	209	193	187	189	191
15...	29.244	244	246	248	256	268	282	290
16...	29.268	234	218	216	254	260	260	276
17...	29.425	425	431	449	457	467	479	499
18...	29.624	620	618	620	622	624	628	638
19...	29.589	571	553	539	531	521	511	505
20...	29.631	630	641	646	654	678	690	698
21...	29.733	711	689	683	673	665	659	661
22...	29.585	571	565	555	545	541	563	579
23...	29.724	714	702	680	674	670	676	686
24...	29.756	746	743	723	717	715	709	709
25...	29.720	692	676	666	656	628	648	654
26...	29.554	532	507	511	537	543	573	579
27...	29.963	945	933	929	925	905	899	921
28...	29.979	961	937	929	923	877	899	893
29...	29.805	805	809	811	833	847	851	871
30...	29.885	884	884	884	847	836	835	842
31...	29.735	733	731	707	705	690	676	677

Date. REMARKS.

May 1. Cloudy; rain and snow; fall of water $0^{in}.82$; wind W.
" 2. Snow and rain; cloudy; fall of water $0^{in}.12$; wind W.
" 3. Cloudy; wind N. W.
" 4. Cloudy; wind N. W.
" 5. Clear; wind N. W.
" 6. Cloudy; clear; wind S. E.
" 7. Changeable; wind N. W.
" 8. Changeable; aurora borealis; wind W.
" 9. Cloudy; clear; aurora; wind W.
" 10. Clear; wind S.
" 11. Clear; wind S. W.

TYPO-BAROGRAPH.

May, 1869.

Date.	8*h*.	9*h*.	10*h*.	11*h*.	12*h*.	13*h*.	14*h*.	15*h*.
1...	554	546	523	512	500	474	456	424
2...	144	140	140	140	138	130	122	128
3...	334	350	366	366	356	346	344	350
4...	504	516	532	538	562	570	572	572
5...	772	790	784	786	788	806	802	796
6...	816	818	824	824	814	806	806	802
7...	798	806	810	812	812	810	808	808
8...	703	703	715	709	701	697	687	683
9...	650	668	668	670	674	674	675	675
10...	728	746	748	746	752	752	750	748
11...	582	596	606	610	620	624	624	632
12...	523	541	547	559	571	573	575	581
13...	423	412	401	391	380	369	358	347
14...	196	199	189	189	185	187	187	191
15...	310	336	346	340	340	340	339	338
16...	276	294	302	310	312	316	316	322
17...	511	521	533	531	533	535	537	539
18...	654	670	666	668	672	660	654	638
19...	501	501	497	493	491	477	477	479
20...	720	732	746	746	763	764	760	752
21...	665	683	679	673	657	643	637	619
22...	607	637	653	667	677	669	657	655
23...	706	718	728	738	742	744	750	752
24...	715	723	729	731	733	735	737	733
25...	656	664	652	636	630	624	620	614
26...	629	695	729	769	793	817	833	847
27...	935	943	963	971	979	989	987	985

TYPO-BAROGRAPH.

MAY, 1869.

DATE.	16*h*.	17*h*.	18*h*.	19*h*.	20*h*.	21*h*.	22*h*.	23*h*.
1...	414	402	372	334	324	320	276	252
2...	140	146	148	158	166	172	170	174
3...	356	370	399	408	419	408	400	396
4...	588	602	618	642	662	690	702	706
5...	810	818	834	846	840	842	836	828
6...	806	820	826	832	832	820	792	784
7...	810	812	822	824	830	826	802	796
8...	685	685	693	691	685	679	663	655
9...	676	692	712	734	736	738	740	743
10...	744	742	744	746	732	714	698	684
11...	634	638	646	650	644	636	618	604
12...	581	587	591	589	575	571	571	543
13...	336	325	314	303	292	280	278	274
14...	199	209	223	237	243	245	249	243
15...	337	336	334	332	330	328	310	282
16...	338	356	380	386	396	406	418	424
17...	549	571	583	595	619	620	631	631
18...	636	638	640	640	642	632	624	610
19...	497	515	538	577	593	613	615	629
20...	746	768	774	776	776	770	763	750
21...	613	613	619	623	619	607	603	601
22...	673	693	709	737	745	741	739	735
23...	754	764	782	794	792	784	778	766
24...	739	749	763	765	767	757	749	729
25...	602	596	612	608	604	588	574	568
26...	861	893	909	947	952	957	951	967
27...	985	001	013	017	023	015	007	001
28...	795	793	779	783	781	789	791	801
29...	897	915	917	915	899	895	895	890
30...	753	750	763	752	751	749	745	739
31...	654	667	702	729	746	757	771	790

DATE.	REMARKS.
May 22.	Clear; hazy; wind N.
" 23.	Clear; hazy; wind N. W.
" 24.	Hazy; wind E.
" 25.	Hazy; cloudy; wind S. W.
" 26.	Cloudy; wind N. W.
" 27.	Cloudy; wind N. E.
" 28.	Cloudy; rain; wind S. E.
" 29.	Rain; fall of water for 28th and 29th, $0^{\text{in}}.10$; wind N.
" 30.	Cloudy; rain; wind S.
" 31.	Cloudy; rain; wind S.; fall of water for 30th and 31st, $0^{\text{in}}.38$.

TYPO-BAROGRAPH.

JUNE, 1869.

DATE.	0*h*.	1*h*.	2*h*.	3*h*.	4*h*.	5*h*.	6*h*.	7*h*.
1...	29.795	802	788	786	790	791	799	815
2...	29.968	966	962	954	941	935	933	939
3...	29.997	977	965	948	934	922	916	912
4...	29.798	778	754	734	700	688	676	682
5...	29.440	400	372	345	407	457	517	535
6...	29.957	951	951	949	945	947	957	965
7...	30.095	074	066	058	040	016	002	998
8...	29.952	954	958	963	973	999	029	041
9...	30.160	136	110	100	072	060	054	047
10...	29.894	882	862	852	824	808	782	778
11...	29.570	574	560	562	572	572	576	602
12...	29.679	675	671	667	659	669	673	687
13...	29.644	612	582	562	536	526	512	496
14...	29.382	376	372	374	382	380	380	382
15...	29.414	408	401	414	427	440	464	488
16...	29.738	732	728	732	736	760	762	776
17...	29.958	950	946	936	934	930	932	932
18...	29.864	790	756	728	690	676	672	674
19...	29.806	808	816	820	824	832	848	854
20...	29.684	648	614	598	562	540	552	560
21...	29.666	658	648	644	640	640	632	634
22...	29.656	654	654	666	674	676	682	690
23...	29.749	732	715	703	707	711	713	749
24...	29.891	871	861	843	831	823	821	821
25...	29.967	961	963	961	951	945	947	947
26...	29.911	893	883	861	847	829	825	819
27...	29.747	741	731	721	711	711	705	705
28...	29.595	577	531	513	503	505	495	499
29...	29.723	713	708	703	693	671	675	679
30...	29.507	515	509	509	509	511	525	551

DATE. **REMARKS.**

June 1. Cloudy; wind W.
" 2. Rain; fall of water $0^{in}.40$; wind S.
" 3. Clear; wind S. W.
" 4. Cloudy; rain; wind S.; fall of water $0^{in}.05$.
" 5. Rain; cloudy; fall of water $0^{in}.35$; wind W.
" 6. Clear; wind W.
" 7. Clear; wind N. W.
" 8. Rain; changeable; wind N. W.
" 9. Clear; wind S. W.
" 10. Cloudy; rain; changeable; wind S.; fall of water $0^{in}.12$.
" 11. Changeable; wind S. W.

TYPO-BAROGRAPH.

June, 1869.

Date.	8h.	9h.	10h.	11h.	12h.	13h.	14h.	15h.
1...	841	854	878	890	916	921	925	933
2...	944	962	966	966	967	967	975	971
3...	910	912	914	910	908	904	892	882
4...	684	682	674	658	626	604	586	568
5...	587	623	655	677	693	717	741	771
6...	995	021	039	053	069	075	081	081
7...	002	010	002	996	994	988	970	970
8...	059	072	086	100	106	112	118	116
9...	047	037	033	033	021	021	017	011
10...	770	772	772	768	731	713	701	681
11...	612	620	627	629	627	619	611	611
12...	691	710	714	720	720	720	710	698
13...	480	478	476	472	462	426	396	374
14...	382	392	394	396	398	398	406	414
15...	522	570	602	612	628	652	658	660
16...	796	828	848	856	872	872	882	894
17...	938	958	960	960	962	964	960	960
18...	694	716	718	714	714	714	708	702
19...	858	880	870	874	872	872	858	838
20...	556	564	568	570	570	572	574	576
21...	642	648	648	652	630	638	612	630
22...	706	724	726	736	742	738	738	740
23...	775	815	831	855	857	863	863	867
24...	831	849	857	867	867	869	873	885
25...	957	967	973	973	967	956	951	945
26...	819	825	829	823	823	815	811	791
27...	711	729	727	715	701	699	683	663
28...	503	533	553	565	559	585	613	631
29...	685	695	691	695	693	679	657	657
30...	587	623	653	671	693	699	707	715

Date.	Remarks.
June 12.	Clear; rain; wind S.
" 13.	Cloudy; rain; wind S.; fall of water $0^{in}.10$.
" 14.	Cloudy; wind S.
" 15.	Cloudy; rain; wind W.; fall of water $0^{in}.10$.
" 16.	Clear; rain; wind S. W.; fall of water $0^{in}.05$.
" 17.	Clear; cloudy; wind S. W.
" 18.	Rain; changeable; wind S. W.; fall of water $0^{in}.05$.
" 19.	Cloudy to 20*h.;* rain; wind S. W.
" 20.	Rain; wind S.; fall of water for 19th and 20th $0^{in}.88$.
" 21.	Cloudy to 12*h.;* sprinkle of rain; wind E.

TYPO-BAROGRAPH.

June, 1869.

Date.	16*h*.	17*h*.	18*h*.	19*h*.	20*h*.	21*h*.	22*h*.	23*h*.
1...	927	940	940	958	962	971	973	969
2...	978	988	008	016	017	019	015	011
3...	883	894	900	896	874	862	856	832
4...	554	544	536	524	522	496	482	453
5...	805	837	877	907	933	943	955	967
6...	095	119	141	155	161	159	139	121
7...	962	954	954	954	958	958	958	952
8...	140	156	172	182	190	190	194	190
9...	997	989	979	957	937	909	897	895
10...	665	661	657	657	651	631	623	599
11...	612	632	642	652	668	672	680	678
12...	694	700	710	712	698	686	664	661
13...	372	372	378	388	406	390	380	372
14...	418	418	422	440	435	430	425	420
15...	674	684	698	722	726	728	728	733
16...	912	928	944	958	959	962	958	958
17...	964	966	972	962	950	928	879	873
18...	718	752	772	792	798	808	816	806
19...	840	828	808	804	780	768	752	718
20...	576	600	610	620	636	654	654	656
21...	616	640	652	656	652	658	672	652
22...	728	740	752	762	764	766	768	768
23...	877	891	901	909	911	909	909	897
24...	899	907	931	939	949	955	957	957
25...	951	949	949	947	951	947	939	929
26...	785	783	783	785	787	777	775	769
27...	663	671	669	653	653	645	627	627
28...	651	667	673	695	707	707	711	723
29...	635	617	593	575	569	553	535	523
30...	739	757	783	811	841	859	867	863

Date. REMARKS.

June 22. Cloudy; wind S. E.
" 23. Rain; changeable; wind S. E.; fall of water $0^{in}.15$.
" 24. Clear; hazy; wind S. W.
" 25. Cloudy; rain; wind W.; fall of water $0^{in}.38$.
" 26. Cloudy; rain; wind S.; fall of water $0^{in}.92$.
" 27. Rain; wind S. E.
" 28. Rain to 10*h*.; clear; wind S. E.; fall of water for 27th and 28th, $0^{in}.65$.
" 29. Rain; clear; wind S.
" 30. Rain; changeable; wind N. W.; fall of water for 29th and 30th, $0^{in}.43$.

TYPO-BAROGRAPH.

July, 1869.

Date.	0h.	1h.	2h.	3h.	4h.	5h.	6h.	7h.
1...	29.858	843	840	842	828	822	820	818
2...	29.750	738	726	710	696	684	664	654
3...	29.578	592	606	586	552	542	532	538
4...	29.604	600	606	608	624	648	662	688
5...	29.972	972	970	968	964	974	976	002
6...	30.122	100	090	086	078	062	060	066
7...	30.042	014	996	976	954	932	924	917
8...	29.864	830	796	794	766	806	810	826
9...	29.575	540	599	658	638	628	632	640
10...	29.774	752	752	744	716	702	700	690
11...	29.502	498	508	522	538	552	590	616
12...	29.828	814	810	808	796	790	806	822
13...	29.910	898	884	876	873	856	850	852
14...	29.886	882	874	876	856	846	840	836
15...	29.698	680	684	672	678	670	674	684
16...	29.538	534	538	538	542	556	550	542
17...	29.688	684	678	676	678	666	664	662
18...	29.696	692	658	642	632	622	628	632
19...	29.738	732	732	728	722	714	712	716
20...	29.778	762	738	724	720	698	686	686
21...	29.572	564	540	530	528	554	566	602
22...	29.814	814	818	816	815	814	812	816
23...	29.896	884	878	870	862	856	851	860
24...	29.882	856	836	802	794	808	810	814
25...	29.822	801	798	782	772	764	760	760
26...	29.778	770	760	736	714	690	690	698
27...	29.682	638	618	620	642	644	652	662
28...	29.702	698	696	682	672	676	682	692
29...	29.576	574	570	566	580	592	602	644
30...	29.832	836	840	841	844	858	880	890
31...	30.120	118	120	120	110	104	122	132

Date. REMARKS.

July 1. Cloudy; wind S. W.
" 2. Cloudy; wind S. E.
" 3. Rain; fall of water $0^{in}.35$; wind S. W.
" 4. Changeable; wind W.
" 5. Changeable; wind N.
" 6. Clear; wind N.
" 7. Clear; wind S.
" 8. Rain; fall of water $0^{in}.64$; wind S. E.
" 9. Changeable; wind S.
" 10. Clear; cloudy; wind S. E.
" 11. Clear; wind W.

TYPO-BAROGRAPH.

JULY, 1869.

DATE.	8h.	9h.	10h.	11h.	12h.	13h.	14h.	15h.
1...	824	830	842	840	826	826	806	808
2...	650	646	652	652	654	644	632	622
3...	544	556	556	554	548	544	544	540
4...	708	736	744	752	772	790	810	828
5...	016	046	056	072	086	090	094	096
6...	074	086	094	096	096	088	088	088
7...	910	904	920	930	932	930	916	908
8...	758	788	800	780	774	764	750	732
9...	660	664	678	690	694	700	700	706
10...	680	658	632	624	612	612	602	586
11...	652	682	694	706	718	730	742	754
12...	828	852	866	886	888	888	886	876
13...	858	874	874	872	860	862	866	860
14...	844	848	834	842	842	842	797	782
15...	678	684	688	676	672	670	660	658
16...	566	576	596	602	600	602	602	592
17...	678	688	702	702	688	682	686	680
18...	640	666	672	676	678	682	684	682
19...	720	752	762	768	780	792	794	792
20...	690	694	696	690	682	676	644	638
21...	640	676	692	702	716	718	726	734
22...	830	854	858	860	860	872	870	868
23...	872	880	884	894	898	898	898	894
24...	820	826	840	840	838	836	838	844
25...	766	782	796	800	804	804	810	810
26...	698	700	696	702	700	692	674	682
27...	676	682	682	686	710	710	716	714
28...	696	716	708	698	684	660	640	616
29...	676	710	730	748	754	760	764	770
30...	920	942	970	990	988	000	016	032
31...	136	158	170	170	176	182	188	194

DATE.	REMARKS.
July 12.	Changeable; wind S.
" 13.	Cloudy; wind S.
" 14.	Rain; fall of water $0^{in}.50$; wind S.
" 15.	Cloudy; wind S.
" 16.	Changeable; wind W.
" 17.	Cloudy; wind N. W.
" 18.	Changeable; wind W.
" 19.	Clear; wind S. W.
" 20.	Cloudy; rain; wind S. W.
" 21.	Cloudy; wind W.

TYPO-BAROGRAPH.

July, 1869.

Date.	16*h*.	17*h*.	18*h*.	19*h*.	20*h*.	21*h*.	22*h*.	23*h*.
1...	810	812	818	822	822	818	806	782
2...	622	632	630	618	618	606	600	600
3...	538	554	562	568	576	578	586	608
4...	865	888	924	942	954	972	972	973
5...	106	126	142	148	166	160	158	144
6...	088	094	098	096	092	080	076	054
7...	904	908	908	914	908	906	886	876
8...	726	712	710	700	696	666	650	620
9...	710	718	734	748	752	758	782	776
10...	572	560	562	554	549	504	502	504
11...	667	780	793	806	810	824	830	842
12...	890	904	908	934	946	938	930	922
13...	860	858	874	882	896	898	900	892
14...	781	782	786	784	770	772	752	748
15...	638	640	634	604	590	568	560	542
16...	598	608	622	656	664	682	692	696
17...	682	688	694	690	698	700	700	700
18...	682	690	704	716	726	730	736	740
19...	794	794	793	793	792	790	794	792
20...	642	630	638	630	626	614	600	594
21...	738	756	770	780	798	804	810	812
22...	878	888	897	906	916	918	912	898
23...	886	892	896	912	912	892	888	892
24...	842	850	854	858	856	846	842	840
25...	804	800	792	798	798	797	796	792
26...	678	678	684	692	692	688	686	682
27...	718	728	730	734	734	732	726	718
28...	598	580	580	552	558	568	563	576
29...	776	782	802	806	812	810	818	822
30...	048	074	094	100	118	126	120	121
31...	200	206	212	218	225	232	232	218

Date.	Remarks.
July 22.	Cloudy; hazy; wind N. W.
" 23.	Cloudy; wind S. W.
" 24.	Changeable; wind S.
" 25.	Cloudy; wind S.
" 26.	Rain; cloudy; wind S.
" 27.	Cloudy; wind S. E.
" 28.	Rain; changeable; fall of water $0^{in}.20$; wind S.
" 29.	Cloudy; wind N. W.
" 30.	Clear; wind N. E.
" 31.	Clear; wind S. E.

TYPO-BAROGRAPH.

AUGUST, 1869.

DATE.	0*h*.	1*h*.	2*h*.	3*h*.	4*h*.	5*h*.	6*h*.	7*h*.
1...	30.202	170	164	138	126	102	113	117
2...	29.944	904	861	831	805	785	763	759
3...	29.587	585	579	583	587	593	597	597
4...	29.625	627	628	605	609	605	611	611
5...	29.631	627	631	633	645	669	685	731
6...	29.885	883	879	882	885	899	911	929
7...	29.981	971	961	957	955	957	965	985
8...	30.021	003	995	975	959	959	961	963
9...	29.949	927	907	897	875	867	863	873
10...	29.857	835	815	795	779	763	759	765
11...	29.751	743	739	761	761	763	765	785
12...	29.957	959	929	923	915	897	897	898
13...	29.847	833	833	823	801	797	803	811
14...	29.959	947	927	915	911	899	877	879
15...	29.679	663	663	659	609	601	591	597
16...	29.743	749	753	759	765	769	783	793
17...	29.907	911	905	899	899	893	903	907
18...	29.919	915	889	864	865	865	866	866
19...	29.849	842	841	808	774	769	746	745
20...	29.624	610	618	618	618	618	610	628
21...	29.748	746	744	748	742	742	748	756
22...	29.910	909	900	889	882	885	893	901
23...	30.042	024	006	002	006	012	018	022
24...	30.044	014	984	976	972	962	958	954
25...	29.760	734	703	664	646	673	676	654
26...	29.824	824	819	814	813	820	829	846
27...	29.912	903	890	880	866	860	860	856
28...	29.726	697	647	608	592	572	566	560
29...	29.630	634	630	629	629	628	630	658
30...	29.727	728	727	725	712	714	708	712
31...	29.834	826	819	819	831	839	856	864

DATE. **REMARKS.**

Aug. 1. Clear; wind S.
" 2. Cloudy; clear; wind S. W.
" 3. Clear; wind N. W.
" 4. Rain; cloudy; fall of water $0^{in}.50$; wind N.
" 5. Cloudy; wind N.
" 6. Cloudy; wind W.
" 7. Cloudy; clear; wind N.
" 8. Clear; wind S.
" 9. Clear; wind S.
" 10. Clear; wind S.
" 11. Cloudy; rain; clear; wind N.

TYPO-BAROGRAPH.

August, 1869.

Date.	8h.	9h.	10h.	11h.	12h.	13h.	14h.	15h.
1...	119	117	109	095	091	073	063	060
2...	775	777	765	755	721	699	677	649
3...	599	607	619	619	619	621	615	609
4...	627	627	619	613	601	593	587	585
5...	753	785	795	805	805	805	807	821
6...	945	947	951	957	959	961	955	963
7...	993	005	005	017	027	037	041	039
8...	979	989	993	995	995	989	989	987
9...	881	885	891	891	893	893	885	891
10...	783	795	797	795	795	791	783	783
11...	794	803	813	823	839	857	861	871
12...	899	900	901	901	907	899	889	887
13...	827	835	843	843	843	843	847	863
14...	879	881	875	873	879	871	845	823
15...	607	599	619	607	625	631	633	645
16...	807	829	841	847	845	843	841	833
17...	915	917	923	933	927	919	921	913
18...	867	868	861	862	863	856	859	858
19...	745	752	745	736	735	718	697	690
20...	636	662	662	668	670	670	666	670
21...	756	782	786	790	792	798	802	816
22...	924	941	950	969	982	991	994	001
23...	040	046	046	046	046	047	048	052
24...	952	936	932	926	934	936	936	926
25...	654	656	658	660	666	670	672	682
26...	853	866	879	892	911	916	921	920
27...	852	834	828	834	830	829	830	829
28...	556	550	540	530	542	550	552	554
29...	674	686	692	692	692	694	688	692
30...	734	740	746	750	756	760	770	774
31...	886	900	914	919	923	931	929	929

Date.		Remarks.
Aug.	12.	Clear; wind S.
"	13.	Rain; changeable; fall of water $0^{in}.50$; wind N. E.
"	14.	Changeable; rain; wind E.
"	15.	Rain; cloudy; wind N. W.; fall of water for 14th and 15th, $0^{in}.80$.
"	16.	Cloudy; rain; wind S.; fall of water $0^{in}.30$.
"	17.	Cloudy; wind S. E.
"	18.	Changeable; wind S. E.
"	19.	Cloudy; wind E.
"	20.	Cloudy; wind E.
"	21.	Cloudy; wind N. E.

TYPO-BAROGRAPH.

August, 1869.

Date.	**16*h*.**	**17*h*.**	**18*h*.**	**19*h*.**	**20*h*.**	**21*h*.**	**22*h*.**	**23*h*.**
1...	050	054	054	062	064	044	020	988
2...	633	621	615	607	605	607	603	597
3...	609	623	637	645	647	649	637	627
4...	585	589	605	615	625	627	633	635
5...	839	865	877	887	903	909	909	907
6...	981	991	001	003	001	997	995	985
7...	035	047	069	071	070	069	065	037
8...	987	989	995	999	003	999	987	963
9...	889	899	907	905	899	889	881	875
10...	783	785	791	793	793	791	787	777
11...	881	891	901	911	921	930	939	948
12...	885	887	885	883	907	903	883	869
13...	875	891	910	943	959	967	979	976
14...	797	785	761	753	739	731	715	693
15...	647	669	685	707	709	725	729	739
16...	841	847	863	871	877	879	885	901
17...	913	925	941	951	951	945	943	931
18...	855	875	879	883	898	898	892	862
19...	666	673	678	678	671	670	641	633
20...	680	684	706	714	722	742	748	748
21...	822	838	846	874	884	896	904	908
22...	010	031	054	064	077	086	079	062
23...	054	060	084	090	092	084	082	058
24...	918	916	900	900	900	870	840	810
25...	698	718	740	776	802	816	830	832
26...	917	924	947	956	947	948	945	936
27...	822	812	810	808	790	776	754	736
28...	558	580	608	618	628	628	628	632
29...	696	706	728	734	742	748	740	732
30...	784	796	820	840	850	856	854	844
31...	929	931	944	958	972	984	986	984

Date. **Remarks.**

Aug. 22. Clear; wind E.
" 23. Clear; wind N. E.
" 24. Changeable; wind E.
" 25. Cloudy; rain; wind N. W.; fall of water $0^{in}.30$.
" 26. Clear; wind N. E.
" 27. Changeable; wind S.
" 28. Cloudy; rain; clear; wind N.; fall of water $0^{in}.20$.
" 29. Clear; wind N. W.
" 30. Cloudy; wind N.
" 31. Changeable; wind N.

TYPO-BAROGRAPH.

SEPTEMBER, 1869.

DATE.	0*h*.	1*h*.	2*h*.	3*h*.	4*h*.	5*h*.	6*h*.	7*h*.
1...	29.983	993	991	991	985	989	995	017
2...	30.125	115	102	101	091	079	081	079
3...	30.063	045	027	023	015	011	015	023
4...	30.005	983	949	939	923	921	921	919
5...	29.941	917	891	871	865	852	861	871
6...	29.919	911	903	872	885	882	882	884
7...	29.806	787	764	747	740	725	718	718
8...	29.470	452	384	358	310	261	250	257
9...	29.662	667	670	669	686	699	720	731
10...	29.813	804	801	801	803	821	824	836
11...	29.918	912	906	904	901	907	914	924
12...	30.055	046	035	033	041	037	037	040
13...	30.161	142	126	122	116	116	117	119
14...	30.163	138	114	098	080	078	065	070
15...	30.040	006	972	952	925	923	923	925
16...	29.923	905	896	890	876	875	875	882
17...	30.054	054	054	056	062	064	072	094
18...	30.188	182	170	160	150	140	132	140
19...	30.126	094	062	032	018	010	010	010
20...	29.898	898	850	823	820	822	826	842
21...	29.974	964	954	944	938	942	953	971
22...	30.079	058	047	043	047	049	049	056
23...	30.137	117	107	104	093	094	095	111
24...	30.134	118	119	116	115	117	119	121
25...	30.080	050	025	999	977	972	970	961
26...	29.564	540	532	547	572	592	602	641
27...	29.728	741	778	786	806	843	863	884
28...	30.092	072	075	076	077	078	082	094
29...	30.164	140	121	105	092	092	094	104
30...	30.168	176	075	065	063	061	059	057

DATE. **REMARKS.**

Sept. 1. Cloudy; wind N. W.
" 2. Cloudy; wind N. E.
" 3. Clear; wind S. E.
" 4. Clear; wind S. E.
" 5. Clear; wind S. E.
" 6. Cloudy; wind S. E.
" 7. Cloudy; rain; wind S. E.
" 8. Cloudy; rain; wind S. W.; fall of water $0^{\text{in}}.50$.
all of water $0^{\text{in}}.37$; wind S. W.
. E.; changeable.

TYPO-BAROGRAPH.

September, 1869.

Date.	8*h*.	9*h*.	10*h*.	11*h*.	12*h*.	13*h*.	14*h*.	15*h*.
1...	034	054	065	073	073	077	079	081
2...	081	081	085	089	093	075	069	065
3...	035	037	041	041	041	041	042	043
4...	921	921	939	941	949	951	953	954
5...	895	905	915	919	931	937	937	925
6...	906	913	919	921	922	914	902	882
7...	713	692	680	651	638	611	594	581
8...	278	281	281	280	300	336	379	416
9...	744	759	768	769	776	777	778	779
10...	846	847	856	864	868	870	871	879
11...	937	947	960	967	982	990	996	004
12...	056	060	072	078	089	095	093	095
13...	122	128	130	136	140	160	163	166
14...	076	078	084	086	092	088	084	082
15...	932	932	934	933	932	930	928	926
16...	890	894	903	907	909	923	926	928
17...	096	104	108	109	110	114	110	128
18...	144	162	154	146	148	149	150	148
19...	010	007	004	996	990	986	964	964
20...	856	906	924	928	932	936	940	944
21...	983	005	013	016	024	027	029	043
22...	060	062	075	079	078	077	074	079
23...	118	126	123	143	144	144	145	147
24...	123	124	122	119	113	114	115	117
25...	960	939	925	902	890	866	843	813
26...	642	641	640	634	634	637	634	628
27...	896	907	911	913	916	936	947	969
28...	097	107	106	103	114	132	138	145
29...	117	120	125	122	139	157	158	148
30...	055	053	051	049	049	051	056	057

Date.	Remarks.
Sept. 11.	Clear; wind S. E.
" 12.	Clear; wind S. E.
" 13.	Clear; wind S. E.
" 14.	Clear; wind S. E.
" 15.	Clear; wind E.
" 16.	Clear; cloudy; wind S. E.
" 17.	Cloudy; wind S. E.
" 18.	Clear; wind S. E.
" 19.	Clear; wind N.
" 20.	Cloudy; rain; wind N. E.; fall of water $0^{in}.42$.

TYPO-BAROGRAPH.

SEPTEMBER, 1869.

DATE.	16*h*.	17*h*.	18*h*.	19*h*.	20*h*.	21*h*.	22*h*.	23*h*.
1...	091	101	115	123	145	149	143	139
2...	067	071	097	101	105	111	103	077
3...	045	047	048	048	047	043	033	025
4...	955	957	973	981	980	979	977	957
5...	927	945	945	949	957	957	955	949
6...	882	883	885	883	874	866	860	837
7...	581	582	582	582	557	537	522	495
8...	448	489	531	566	575	612	623	657
9...	790	793	802	814	817	830	851	846
10...	889	905	919	928	936	940	938	930
11...	023	031	052	073	076	074	071	060
12...	116	138	154	164	172	180	171	173
13...	172	196	206	210	218	220	208	188
14...	080	082	084	086	088	084	070	055
15...	924	928	930	938	936	934	929	926
16...	934	954	991	013	023	037	053	049
17...	136	150	168	182	186	190	192	195
18...	142	150	150	149	148	152	152	142
19...	966	950	948	948	943	928	920	904
20...	948	952	956	960	964	978	972	974
21...	044	050	053	061	080	084	087	085
22...	084	086	106	115	132	145	150	143
23...	154	161	172	182	186	193	181	167
24...	119	120	125	125	124	121	108	089
25...	794	770	754	743	706	686	645	604
26...	627	638	673	645	671	695	708	718
27...	988	034	035	063	071	080	096	092
28...	150	167	175	187	226	218	200	186
29...	148	145	152	168	181	190	173	140
30...	058	059	060	066	073	073	066	063

DATE.	REMARKS.
Sept. 21.	Rain; cloudy; wind S. E.
" 22.	Rain; fall of water for 21st and 22d, $0^{in}.87$.
" 23.	Changeable; wind N. E.
" 24.	Cloudy; wind S. E.
" 25.	Clear; rain; wind S. E.
" 26.	Rain; wind W.; fall of water for 25th and 26th, $1^{in}.06$.
" 27.	Clear; wind W.
" 28.	Clear; wind S. E.
" 29.	Clear; wind S.
" 30.	Clear; wind S.

TYPO-BAROGRAPH.

OCTOBER, 1869.

DATE.	0*h*.	1*h*.	2*h*.	3*h*.	4*h*.	5*h*.	6*h*.	7*h*.
1...	30.057	026	994	986	980	976	974	976
2...	29.936	900	878	864	858	848	842	854
3...	29.752	738	724	732	722	720	720	719
4...	29.286	274	232	200	158	146	152	186
5...	29.592	604	636	656	670	686	710	744
6...	29.918	906	898	884	886	889	894	904
7...	30.058	042	039	024	016	018	022	018
8...	30.100	084	070	064	060	056	054	056
9...	30.048	020	002	990	982	982	980	988
10...	29.817	808	781	766	755	742	735	719
11...	29.556	540	534	543	549	556	560	574
12...	29.646	623	598	578	566	560	558	560
13...	29.446	435	423	426	437	440	443	448
14...	29.614	596	584	586	588	590	592	608
15...	29.657	634	624	622	624	658	664	672
16...	29.628	602	592	590	596	604	618	626
17...	29.545	533	528	537	558	571	582	587
18...	29.729	721	721	743	747	770	786	804
19...	29.780	762	739	724	721	720	722	726
20...	29.802	796	794	786	784	780	780	792
21...	29.772	738	722	704	696	697	698	700
22...	29.862	843	842	840	840	844	848	860
23...	29.608	566	522	490	448	432	404	396
24...	29.748	768	780	810	848	862	892	916
25...	30.160	150	152	162	166	174	200	212
26...	30.012	972	936	934	884	878	880	874
27...	29.902	888	880	881	882	881	880	878
28...	29.536	498	470	453	450	454	460	450
29...	29.448	444	440	443	446	454	476	498
30...	29.688	690	692	706	726	742	770	788
31...	30.002	990	978	974	973	972	972	976

DATE. REMARKS.

Oct. 1. Clear and pleasant; wind S. E.
" 2. Rain; fall of water 0^{in}.93; wind N. E.
" 3. Rain; fall of water 5^{in}.86; wind W.
" 4. Rain; fall of water 0^{in}.15; wind S. W.
" 5. Clear; wind N. W.
" 6. Clear; wind S. E.
" 7. Changeable; wind N. E.
" 8. Changeable; wind N. E.
" 9. Rain; wind N. W.
" 10. Rain; wind S. E.; fall of water for 9th and 10th, 2^{in}.55.
" 11. Rain; wind S.

TYPO-BAROGRAPH.

OCTOBER, 1869.

DATE.	8*h*.	9*h*.	10*h*.	11*h*.	12*h*.	13*h*.	14*h*.	15*h*.
1...	977	978	976	975	974	968	954	952
2...	864	860	848	832	816	793	776	754
3...	718	714	702	700	666	646	608	592
4...	216	260	283	308	308	312	318	324
5...	758	774	782	786	796	812	818	828
6...	912	926	948	958	974	983	988	988
7...	018	024	026	030	048	062	062	062
8...	058	060	063	066	069	072	075	078
9...	988	980	970	946	936	930	924	922
10...	714	670	636	612	582	566	556	550
11...	594	608	625	646	656	660	662	664
12...	566	566	558	536	524	518	512	508
13...	449	461	464	484	509	520	535	546
14...	619	614	622	618	614	604	606	604
15...	674	678	664	662	654	658	662	650
16...	644	656	657	658	656	646	644	640
17...	600	616	626	642	646	651	657	664
18...	820	840	848	845	840	849	850	853
19...	731	736	738	736	734	736	732	736
20...	802	806	806	812	814	814	813	812
21...	702	708	716	718	722	724	726	730
22...	900	903	892	846	856	852	850	818
23...	388	378	390	402	438	458	486	530
24 ..	936	960	968	976	992	006	024	038
25...	214	216	204	198	196	182	178	178
26...	886	894	886	880	870	846	836	824
27...	860	854	838	822	810	808	800	766
28...	452	454	456	452	450	444	442	440
29...	526	544	566	576	574	580	583	586
30...	802	812	820	818	836	848	866	880
31...	978	976	972	968	956	946	932	916

DATE. REMARKS.

Oct. 12. Rain; wind S. W.; fall of water for 11th and 12th, $1^{in}.70$.
" 13. Rain; wind S.; fall of water $2^{in}.76$.
" 14. Rain; changeable; fall of water $0^{in}.09$; wind S. W.
" 15. Wind W.; cloudy.
" 16. Wind N.; clear.
" 17. Clear; wind N. W.
" 18. Cloudy; wind S. E.
" 19. Cloudy; wind S.
" 20. Changeable; wind S. E.; rain.
" 21. Wind S. W.; changeable.

TYPO-BAROGRAPH.

OCTOBER, 1869.

DATE.	16h.	17h.	18h.	19h.	20h.	21h.	22h.	23h.
1...	952	954	958	968	974	974	964	944
2...	746	738	744	772	780	790	794	776
3...	534	464	460	378	272	262	252	284
4...	346	364	396	438	474	504	518	560
5...	840	858	888	918	923	928	930	924
6...	009	029	034	066	078	090	080	074
7...	068	074	100	110	126	126	114	112
8...	081	084	087	090	094	098	102	075
9...	924	918	918	912	898	896	886	866
10...	546	530	536	554	565	568	563	564
11...	674	674	678	688	698	694	686	678
12...	502	474	456	455	454	464	474	465
13...	563	600	621	632	642	644	652	636
14...	618	624	625	640	660	666	674	671
15...	646	656	660	662	664	664	659	654
16...	637	629	619	619	616	613	592	568
17...	670	694	704	726	737	741	729	731
18...	854	859	855	853	848	850	836	806
19...	740	746	764	778	789	802	804	808
20...	812	814	816	820	824	824	818	810
21...	748	762	770	792	818	834	844	864
22...	810	822	802	792	764	734	716	672
23...	552	576	614	652	678	698	736	740
24...	054	066	082	102	138	152	163	164
25...	164	138	136	134	132	130	100	060
26...	840	858	875	894	920	932	936	930
27...	740	714	682	656	654	638	610	570
28...	438	440	444	450	470	473	478	470
29...	594	608	618	636	660	670	686	694
30...	898	908	920	950	984	000	004	008
31...	898	892	880	880	876	858	858	842

DATE.	REMARKS.
Oct. 22.	Wind S. W.; changeable.
" 23.	Rain; changeable; wind W.; fall of water $0^{in}.31$.
" 24.	Changeable; wind S. W.
" 25.	Changeable; wind S. E.
" 26.	Cloudy; snow; wind W.
" 27.	Clear; changeable; wind S. E.
" 28.	Cloudy; rain; wind S. E.; fall of water $0^{in}.05$.
" 29.	Cloudy; wind S. W.
" 30.	Cloudy; wind W.
" 31.	Cloudy; wind S. E.

TYPO-BAROGRAPH.

NOVEMBER, 1869.

DATE.	0*h*.	1*h*.	2*h*.	3*h*.	4*h*.	5*h*.	6*h*.	7*h*.
1...	29.816	802	802	802	812	834	856	879
2...	30.112	104	096	098	108	112	116	126
3...	30.080	042	022	002	984	980	972	976
4...	29.876	856	828	812	792	786	776	768
5...	29.505	492	480	468	456	460	480	500
6...	29.520	516	516	510	516	520	530	518
7...	29.236	236	232	234	238	256	270	278
8...	29.314	321	329	337	353	372	386	404
9...	29.597	563	559	551	550	558	570	568
10...	29.634	631	633	633	659	659	674	682
11...	29.673	675	679	693	699	701	702	708
12...	29.787	779	763	761	773	787	801	805
13...	29.880	867	855	.857	867	865	867	853
14...	29.762	748	736	734	738	742	746	752
15...	29.837	831	829	837	853	863	875	875
16...	30.034	030	028	020	020	018	008	008
17...	29.266	226	204	196	202	224	258	290
18...	29.499	507	531	563	591	631	685	689
19...	29.903	871	853	845	851	821	803	803
20...	29.131	185	248	323	390	434	458	466
21...	29.748	748	753	758	779,	793	819	839
22...	30.071	061	021	031	015	994	980	990
23...	29.831	822	827	829	843	863	875	877
24...	30.034	044	060	078	086	107	139	157
25...	30.229	219	192	188	179	183	180	184
26...	30.066	056	044	026	030	022	016	006
27...	29.726	696	665	653	641	631	645	647
28...	29.855	847	851	869	890	900	906	922
29...	29.952	920	909	881	879	869	853	845
30...	29.571	563	552	549	547	543	536	504

DATE. **REMARKS.**

Nov. 1. Changeable; wind N. W.
" 2. Clear; wind S. E.
" 3. Clear; wind S. E.
" 4. Clear; wind S. E.
" 5. Changeable; wind W.
" 6. Cloudy; wind S. W.
" 7. Cloudy; snow; fall of water $0^{in}.35$; wind W.
" 8. Snow; cloudy; fall of water $0^{in}.10$; wind W.
" 9. Cloudy; wind S. W.
" 10. Cloudy; wind S. W.

TYPO-BAROGRAPH.

November, 1869.

Date.	8*h*.	9*h*.	10*h*.	11*h*.	12*h*.	13*h*.	14*h*.	15*h*.
1...	902	912	912	922	938	958	978	982
2...	136	146	152	151	150	154	144	134
3...	978	976	972	960	959	958	958	932
4...	754	746	714	702	676	654	628	592
5...	516	524	530	512	520	516	514	512
6...	506	510	494	476	456	430	418	394
7...	284	284	284	284	282	282	280	276
8...	424	437	441	454	467	480	492	496
9...	563	559	557	555	558	561	564	567
10...	680	696	700	702	700	705	713	709
11...	708	714	716	720	728	736	746	748
12...	821	827	829	835	854	854	860	860
13...	861	837	839	839	829	817	789	789
14...	760	760	762	762	764	766	780	782
15...	887	907	907	909	913	919	941	961
16...	002	978	964	946	928	864	834	790
17...	300	298	280	274	266	252	256	266
18...	701	729	749	761	795	817	827	839
19...	823	813	791	783	735	703	645	569
20...	489	503	507	529	542	548	576	588
21...	867	879	898	916	932	944	966	990
22...	970	942	946	919	902	874	875	855
23...	871	878	890	884	878	878	881	881
24...	166	164	194	201	201	205	214	236
25...	175	151	150	152	145	147	148	144
26...	990	972	962	940	919	899	885	867
27...	659	667	672	676	688	690	706	716

TYPO-BAROGRAPH.

November, 1869.

Date.	16*h*.	17*h*.	18*h*.	19*h*.	20*h*.	21*h*.	22*h*.	23*h*.
1...	018	038	058	081	106	114	118	118
2...	135	136	148	146	150	148	138	114
3...	952	955	958	960	970	960	950	914
4...	582	552	530	518	520	526	540	518
5...	516	518	526	550	554	552	552	548
6...	370	341	336	316	310	288	278	262
7...	278	282	296	312	316	316	310	300
8...	523	533	535	553	588	592	598	610
9...	570	574	578	582	586	636	640	640
10...	707	707	710	714	716	712	706	684
11...	750	755	757	767	775	779	791	791
12...	868	876	884	914	918	906	899	884
13...	787	781	779	787	789	791	789	779
14...	782	788	800	818	832	840	846	856
15...	953	963	003	019	021	035	045	057
16...	728	694	624	564	508	436	366	326
17...	274	304	335	358	402	458	498	498
18...	839	859	887	885	893	919	909	901
19...	503	491	435	313	143	013	033	089
20...	608	620	639	673	693	717	742	752
21...	994	995	001	059	075	095	103	079
22...	831	817	814	816	828	840	844	844
23...	887	899	909	927	954	981	002	020
24...	228	231	239	257	264	280	280	272
25...	137	133	126	130	137	131	135	100
26...	847	829	821	820	818	810	790	766
27...	734	752	776	788	819	825	853	855
28...	955	945	949	954	969	982	978	974
29...	686	658	654	642	624	581	615	587
30...	386	400	419	438	623	679	755	762

Date.	Remarks.
Nov. 21.	Clear; wind N. W.
“ 22.	Cloudy; rain; wind N. E.
“ 23.	Rain; snow; fall of water for 22d and 23d, $0^{in}.30$; wind S. W.
“ 24.	Cloudy; clear; wind N. W.
“ 25.	Changeable; wind N. E.
“ 26.	Wind S.
“ 27.	Wind N. W.
“ 28.	Cloudy; wind S.
“ 29.	Cloudy; rain; gale from S.; fall of water $0^{in}.15$.
“ 30.	Rain; cloudy; wind N. W.; fall of water $0^{in}.54$.

TYPO-BAROGRAPH.

DECEMBER, 1869.

DATE.	0h.	1h.	2h.	3h.	4h.	5h.	6h.	7h.
1...	29.762	763	787	813	844	856	878	906
2...	29.917	901	880	868	861	861	869	874
3...	29.948	957	974	998	037	068	093	115
4...	29.962	964	872	842	818	788	808	810
5...	29.845	829	841	853	867	889	915	934
6...	29.965	931	921	912	922	921	905	902
7...	30.000	978	976	983	991	002	016	033
8...	30.197	193	197	209	229	239	265	284
9...	30.467	445	439	437	433	431	429	430
10...	30.329	281	245	225	203	191	178	161
11...	30.050	044	010	016	016	010	008	007
12...	29.841	823	819	819	825	843	875	885
13...	30.196	210	214	238	252	256	268	284
14...	30.330	309	302	296	291	292	292	292
15...	30.172	147	119	106	106	107	083	072
16...	29.774	737	704	670	665	672	679	686
17...	29.905	903	918	918	919	932	926	929
18...	29.562	478	404	348	268	226	164	154
19...	29.530	522	536	556	578	602	626	642
20...	29.951	945	951	967	995	014	030	059
21...	30.389	372	366	375	391	376	348	345
22...	29.559	517	485	450	428	407	399	387
23...	29.897	891	901	927	955	975	001	027
24...	30.289	267	271	279	277	261	277	289
25...	30.305	274	268	296	292	282	280	286
26...	30.078	046	017	987	979	975	951	945
27...	29.896	860	846	844	828	812	786	774
28...	29.550	534	532	528	520	517	517	523
29...	29.679	679	675	681	687	691	701	706
30...	29.527	515	530	501	571	593	603	605
31...	29.827	820	843	853	857	877	891	903

DATE. **REMARKS.**

Dec. 1. Cloudy; wind N. E.
" 2. Cloudy; snow; wind W.
" 3. Cloudy; wind S.
" 4. Violent gale from S.; snow.
" 5. Snow; fall of water $0^{in}.20$; wind N. E.
" 6. Snow; wind N. W.; fall of water $0^{in}.80$.
" 7. Clear; cloudy; wind E.
" 8. Cloudy; clear; wind N. E.
" 9. Clear; wind E.
" 10. Clear; wind S. E.
" 11. Cloudy; wind S.

TYPO-BAROGRAPH.

DECEMBER, 1869.

DATE.	8h.	9h.	10h.	11h.	12h.	13h.	14h.	15h.
1...	918	933	939	931	935	931	932	946
2...	874	870	861	851	837	832	833	839
3...	132	150	168	186	195	188	192	203
4...	782	771	775	769	761	751	763	765
5...	942	956	968	980	982	002	021	029
6...	890	859	857	846	836	833	851	864
7...	045	060	070	075	085	100	118	119
8...	308	320	340	350	354	363	381	391
9...	428	430	430	424	420	409	409	408
10...	151	140	124	116	090	084	086	084
11...	004	993	977	971	959	941	941	925
12...	891	890	902	916	926	930	948	960
13...	292	295	299	309	305	295	305	321
14...	289	281	280	282	275	259	254	246
15...	068	067	063	044	018	003	003	002
16...	688	697	718	733	752	765	791	805
17...	908	899	906	905	868	855	854	831
18...	138	122	084	081	083	105	141	195
19...	676	704	730	752	766	790	824	838
20...	075	098	118	153	177	190	228	255
21...	327	314	300	287	245	184	158	130
22...	383	411	445	527	563	631	661	701
23...	043	051	061	071	089	111	137	163
24...	290	280	286	298	302	314	330	336
25...	276	256	254	256	253	255	253	245
26...	931	931	927	913	913	927	936	928
27...	768	754	742	720	705	695	689	675
28...	535	543	551	566	568	582	598	614
29...	712	706	700	690	665	655	651	641
30...	605	603	603	607	615	621	657	679
31...	913	920	925	925	927	935	947	961

DATE. REMARKS.

Dec. 12. Rain; cloudy; wind N. E.; fall of water $0^{\text{in}}.10$.
" 13. Cloudy; wind W.
" 14. Clear; cloudy; wind N. E.
" 15. Cloudy; wind S.
" 16. Rain; cloudy; wind S. W.; fall of water $0^{\text{in}}.40$.
" 17. Cloudy; wind N. E.
" 18. Rain and snow; fall of water $0^{\text{in}}.70$; wind N. W.
" 19. Clear; wind W.
" 20. Cloudy; wind S. E.
" 21. Cloudy; snow; sprinkle of rain; fall of water $0^{\text{in}}.20$; wind S. W.

TYPO-BAROGRAPH.

JANUARY, 1870.

DATE.	0*h*.	1*h*.	2*h*.	3*h*.	4*h*.	5*h*.	6*h*.	7*h*.
1...	29.962	952	934	896	900	916	924	891
2...	29.248	138	004	908	826	770	728	716
3...	29.282	268	286	288	292	310	334	350
4...	29.472	464	462	482	492	498	524	536
5...	29.840	858	884	918	938	964	986	006
6...	29.820	806	788	776	762	748	740	730
7...	29.942	938	936	960	942	956	962	966
8...	29.752	730	718	718	726	742	756	776
9...	30.200	172	170	171	178	170	160	170
10...	29.918	880	848	834	821	822	822	824
11...	30.192	194	194	202	182	172	171	181
12...	29.750	700	691	696	710	690	712	734
13...	29.748	730	730	800	850	904	970	001
14...	30.518	481	480	488	472	474	474	454
15...	29.924	874	828	751	720	662	600	578
16...	30.034	016	034	070	048	060	078	084
17...	29.838	780	742	718	690	662	644	666
18...	30.180	170	180	194	200	202	218	238
19...	30.378	332	308	304	304	392	276	276
20...	30.044	992	951	924	896	882	858	844
21...	30.010	010	016	024	036	052	060	084
22...	30.278	240	204	172	158	118	110	100
23...	29.731	730	712	714	742	788	814	838
24...	30.130	118	098	098	094	090	084	074
25...	29.438	362	306	282	280	316	338	384
26...	29.740	738	742	750	773	788	784	800
27..	29.934	934	940	944	960	970	988	008
28...	30.122	094	082	074	076	076	078	088
29...	29.776	704	651	634	584	570	532	514
30...	29.730	731	732	744	760	778	794	798
31...	29.824	800	768	762	742	730	732	714

DATE.	REMARKS.
Jan. 1.	Cloudy; snow; rain; fall of water $1^{in}.00$; wind N. W.
" 2.	Changeable; high wind from S.; rain; fall of water $0^{in}.20$.
" 3.	Changeable; wind S.
" 4.	Changeable; snow; wind N. W.
" 5.	Changeable; snow; wind S.
" 6.	Snow and rain; changeable; wind N. W.
" 7.	Changeable; snow; wind S.; fall of water $0^{in}.30$.
" 8.	Clear; wind N. W.
" 9.	Clear; wind S.
" 10.	Cloudy; wind N. W.
" 11.	Changeable; rain; fall of water $0^{in}.10$; wind S.

TYPO-BAROGRAPH.

JANUARY, 1870.

DATE.	8*h*.	9*h*.	10*h*.	11*h*.	12*h*.	13*h*.	14*h*.	15*h*.
1...	900	888	882	856	838	810	778	738
2...	762	812	854	894	916	956	012	051
3...	364	372	384	388	392	408	420	432
4...	542	548	560	562	568	584	604	620
5...	010	006	000	012	980	988	974	930
6...	722	704	706	710	718	728	760	796
7...	944	934	940	932	924	920	914	898
8...	782	790	806	808	816	830	868	900
9...	164	131	098	082	058	050	048	018
10...	834	826	830	830	822	834	868	891
11...	200	178	162	132	102	048	024	982
12...	750	772	776	794	792	796	802	828
13...	048	061	150	170	211	278	308	364
14...	450	434	420	398	358	328	296	254
15...	592	558	552	574	608	650	700	732
16...	088	080	054	052	037	021	028	022
17...	660	622	544	628	644	736	818	878
18...	254	256	262	278	292	324	342	364
19...	264	250	216	204	180	182	178	178
20...	824	804	774	762	756	742	740	768
21...	098	118	132	158	172	184	214	238
22...	116	106	081	056	031	006	980	954
23...	880	901	944	964	970	971	998	018
24...	052	038	024	008	970	932	880	850
25...	422	454	488	492	492	510	524	542
26...	804	794	786	782	762	748	742	746
27...	012	024	044	048	050	050	060	080
28...	076	062	062	051	042	016	004	980
29...	490	476	456	452	451	458	480	510
30...	806	814	822	822	824	834	840	842
31...	690	660	652	644	598	578	544	528

DATE. **REMARKS.**

Jan. 12. Rain; cloudy; wind N. E.; fall of water 0$^{\text{in}}$.05.
" 13. Hail; cloudy; wind N. E.
" 14. Cloudy; hail; wind S.
" 15. Rain; cloudy; fall of water 0$^{\text{in}}$.05; wind W.
" 16. Clear; rain; fall of water 0$^{\text{in}}$.08; wind S.
" 17. Rain; cloudy; wind S. W.
" 18. Changeable; wind S. W.
" 19. Clear; wind S.
" 20. Changeable; wind N. W.
" 21. Cloudy to 12*h*.; clear; wind S.
" 22. Cloudy; gale from S.

TYPO-BAROGRAPH.

January, 1870.

Date.	16*h.*	17*h.*	18*h.*	19*h.*	20*h.*	21*h.*	22*h.*	23*h.*
1...	700	660	634	568	522	466	416	344
2...	094	124	162	202	240	268	289	289
3...	438	438	442	448	466	486	500	492
4...	638	656	698	728	758	806	834	836
5...	896	880	882	856	852	866	884	848
6...	820	858	878	884	932	970	982	976
7...	874	858	846	836	834	822	810	788
8...	946	980	038	100	142	174	202	204
9...	986	974	972	971	978	980	982	954
10...	914	942	980	040	092	158	176	184
11...	970	944	930	906	888	874	832	798
12...	840	838	852	838	852	846	828	784
13...	371	402	430	446	474	491	524	528
14...	222	248	176	090	120	092	064	010
15...	760	796	838	890	942	994	036	994
16...	974	964	954	948	950	944	928	882
17...	958	016	044	088	131	170	181	200
18...	370	372	374	380	400	408	418	408
19...	170	164	144	140	140	130	124	092
20...	780	784	796	824	860	898	962	992
21...	256	276	292	304	320	330	338	318
22...	928	902	876	850	824	798	772	770
23...	031	052	078	092	108	122	168	158
24...	772	731	680	620	600	540	498	474
25...	580	580	608	638	660	678	720	738
26...	780	784	802	824	800	882	924	931
27...	084	078	086	106	118	134	142	140
28...	972	938	930	902	896	892	862	818
29...	540	564	608	652	680	694	710	716
30...	850	854	862	864	872	876	874	862
31...	528	530	542	548	558	570	584	598

Date. **REMARKS.**

Jan. 23. Cloudy; showers of rain; wind W.; fall of water $0^{\text{in}}.04$.

" 24. Snow, hail, and drizzling rain; wind S.; fall of water $0^{\text{in}}.80$.

" 25. Rain; clear; fall of water $0^{\text{in}}.40$; wind S.

" 26. Hazy; clear; wind N. W.

" 27. Clear; wind N.

" 28. Clear to 12*h.;* cloudy; wind S. E.

" 29. Snow; cloudy.

" 30. Changeable; snow; fall of water for 29th and 30th, $0^{\text{in}}.03$; wind N.

" 31. Cloudy; sprinkle of snow; wind N. W.

TYPO-BAROGRAPH.

February, 1870.

Date.	0*h*.	1*h*.	2*h*.	3*h*.	4*h*.	5*h*.	6*h*.	7*h*.
1...	29.606	621	656	693	726	761	796	843
2...	29.875	827	787	769	769	774	774	790
3...	30.072	061	059	071	083	109	129	155
4...	30.398	364	344	340	338	316	340	348
5...	30.156	111	094	070	048	042	044	045
6...	29.982	960	952	950	948	942	946	958
7...	30.051	030	008	996	002	998	001	998
8...	29.550	480	390	318	310	282	224	193
9...	29.234	232	238	244	274	280	318	328
10...	29.450	456	462	478	490	524	554	582
11...	29.906	878	852	826	798	766	738	686
12...	29.324	298	290	322	378	430	498	550
13...	29.934	942	944	946	958	964	998	016
14...	29.732	642	530	520	510	484	468	446
15...	29.592	602	598	610	632	638	668	684
16...	30.038	030	040	046	070	096	120	154
17...	30.144	102	068	042	038	040	034	028
18...	29.341	274	196	148	118	110	150	160
19...	29.622	624	632	658	681	724	762	788
20...	29.858	828	786	758	730	702	670	638
21...	29.628	622	613	600	608	620	631	644
22...	29.656	642	634	628	628	624	632	634
23...	29.570	538	510	482	468	464	464	470
24...	29.420	404	386	384	412	434	444	476
25...	29.524	500	468	436	414	406	406	404
26...	29.490	470	440	434	444	454	476	496
27...	29.552	498	466	438	416	402	396	374
28...	29.284	276	272	270	270	272	276	280

Date.		Remarks.
Feb.	1.	Clear; cloudy; wind S.
"	2.	Cloudy; snow; fall of water $0^{in}.30$; wind N.
"	3.	Cloudy; clear; wind S. W.
"	4.	Clear; cold; wind S. W.
"	5.	Cloudy; wind S. E.
"	6.	Changeable; wind N. E.
"	7.	Changeable; snow; wind W.
"	8.	Snow to 14*h*.; cloudy; fall of water $1^{in}.00$; wind W.
"	9.	Cloudy; wind W.
"	10.	Changeable; wind W.

TYPO-BAROGRAPH.

FEBRUARY, 1870.

DATE.	8*h*.	9*h*.	10*h*.	11*h*.	12*h*.	13*h*.	14*h*.	15*h*.
1...	872	883	914	915	920	933	947	956
2...	808	808	833	864	874	886	906	906
3...	180	202	221	258	270	280	316	330
4...	360	361	364	344	338	322	308	282
5...	046	048	030	024	022	012	001	992
6...	968	980	990	992	990	994	000	014
7...	976	990	971	950	921	924	910	884
8...	178	174	186	186	184	166	158	152
9...	330	344	346	350	358	354	368	370
10...	602	628	640	674	708	738	776	810
11...	660	632	602	606	588	550	510	440
12...	570	598	610	620	638	668	714	754
13...	000	988	000	998	008	990	978	962
14...	430	410	398	398	382	388	390	394
15...	700	714	700	708	718	726	754	774
16...	168	200	212	224	244	270	280	280
17...	996	980	952	911	874	830	804	768
18...	180	218	210	252	278	308	320	328
19...	814	840	844	850	850	860	882	934
20...	600	588	608	598	632	622	641	664
21...	656	671	680	684	684	682	682	688
22...	634	634	632	628	628	626	624	614
23...	478	474	464	466	470	468	460	454
24...	488	508	536	544	548	546	548	548
25...	396	386	386	384	388	398	422	430
26...	536	578	600	596	604	600	603	606
27...	352	350	350	340	321	318	318	312
28...	286	288	300	302	310	320	342	360

DATE. **REMARKS.**

Feb. 11. Cloudy; wind S.
" 12. Changeable; wind W.
" 13. Clear; cloudy; wind S.
" 14. Snow; cloudy; fall of water $0^{in}.08$; wind W.
" 15. Cloudy; clear; wind W.
" 16. Clear; wind S. E.
" 17. Cloudy; showers of rain; wind S.
" 18. Rain; fall of water $2^{in}.50$; wind W.
" 19. Changeable; wind S. W.

TYPO-BAROGRAPH.

FEBRUARY, 1870.

DATE.	16*h*.	17*h*.	18*h*.	19*h*.	20*h*.	21*h*.	22*h*.	23*h*.
1...	957	959	988	976	966	968	954	928
2...	902	896	940	980	002	032	050	076
3...	350	358	374	385	414	432	428	418
4...	264	260	258	251	250	240	222	190
5...	992	994	996	001	002	004	998	996
6...	016	036	044	066	062	072	074	060
7...	848	861	828	818	792	750	704	630
8...	146	160	180	218	234	244	244	242
9...	380	398	414	432	452	462	462	460
10...	830	846	866	876	894	898	896	910
11...	430	398	382	396	390	390	356	344
12...	784	821	848	880	918	928	871	971
13...	944	924	908	896	854	844	804	776
14...	430	464	502	508	533	538	574	592
15...	820	862	900	942	982	998	026	030
16...	298	284	278	282	280	240	212	188
17...	726	705	661	625	570	540	472	428
18...	350	402	444	484	510	564	588	602
19...	920	914	910	910	921	924	910	894
20...	670	676	684	694	684	680	661	642
21...	690	682	684	678	686	680	672	664
22...	612	618	614	608	616	618	604	598
23...	441	452	446	458	448	442	440	426
24...	554	558	571	580	572	582	566	544
25...	436	468	508	518	512	514	502	504
26...	610	614	622	611	596	582	616	588
27...	304	302	302	304	308	308	304	298
28 ..	376	406	428	442	462	478	472	466

DATE. REMARKS.

Feb. 20. Rain; snow; fall of water $0^{in}.35$; wind S. W.
" 21. Changeable; wind S. W.
" 22. Changeable; wind S.
" 23. Clear; wind S. W.
" 24. Changeable; wind W.
" 25. Changeable; snow; wind W.
" 26. Clear; changeable; wind S. W.
" 27. Cloudy; snow; fall of water $0^{in}.60$; wind N. W.
" 28. Snow; wind W.

TYPO-BAROGRAPH.

MARCH, 1870.

DATE.	0*h*.	1*h*.	2*h*.	3*h*.	4*h*.	5*h*.	6*h*.	7*h*.
1...	29.450	443	424	419	417	415	423	437
2...	29.543	538	537	558	578	617	645	665
3...	29.919	913	921	949	981	983	985	987
4...	29.919	901	867	845	829	827	823	813
5...	29.917	907	889	891	898	909	923	941
6...	29.947	915	893	873	857	853	843	833
7...	29.609	587	567	559	555	555	569	575
8...	29.665	653	645	643	643	653	671	685
9...	29.805	788	783	781	785	803	825	837
10...	29.711	675	641	619	601	601	615	641
11...	29.847	817	789	767	759	753	747	735
12...	29.795	763	731	723	715	713	721	690
13...	29.135	159	181	195	249	299	331	357
14...	29.817	819	807	807	807	809	825	843
15...	29.989	975	941	941	917	919	917	905
16...	29.325	225	125	101	119	173	195	227
17...	29.167	165	163	167	167	193	217	247
18...	29.635	647	653	671	687	725	761	799
19...	29.995	967	945	935	923	911	908	917
20 ..	29.849	829	805	783	767	759	767	753
21...	29.515	485	493	507	548	567	585	603
22...	29.667	667	665	661	665	673	687	693
23...	29.773	771	767	783	801	815	841	869
24..	30.033	031	017	027	049	061	071	101
25...	30.261	255	227	219	221	225	235	239
26...	30.293	261	221	201	153	147	148	145
27...	29.768	741	698	657	621	579	538	499
28...	29.252	253	261	284	310	326	355	383
29...	29.703	706	711	720	741	773	793	820
30...	29.992	988	984	980	976	982	993	988
31...	30.046	040	038	026	017	020	024	028

DATE.	REMARKS.
March 1.	Changeable; snow; fall of water $0^{in}.35$; wind W.
" 2.	Cloudy; changeable; wind W.
" 3.	Cloudy; wind N. E.
" 4.	Cloudy; snow; fall of water $0^{in}.30$; wind N. E.
" 5.	Cloudy; wind N. E.
" 6.	Cloudy; snow; fall of water $0^{in}.16$; wind N. E.
" 7.	Snow; cloudy; fall of water $0^{in}.35$; wind S. E.
" 8.	Cloudy; wind W.
" 9.	Cloudy; wind N. W.
" 10.	Cloudy; wind W.
" 11.	Cloudy; wind W.

TYPO-BAROGRAPH.

MARCH, 1870.

DATE.	8*h*.	9*h*.	10*h*.	11*h*.	12*h*.	13*h*.	14*h*.	15*h*.
1...	451	461	463	463	461	457	457	451
2...	689	717	723	725	731	741	761	763
3...	989	991	993	995	997	999	001	003
4...	798	795	791	804	805	807	811	805
5...	953	957	969	989	001	991	973	975
6...	811	809	789	781	759	749	731	709
7...	585	588	597	605	611	618	625	625
8...	689	693	701	714	725	745	753	761
9...	839	837	827	821	813	809	801	801
10...	667	685	715	731	783	823	843	843
11...	749	751	763	765	767	765	768	767
12...	659	627	595	563	527	485	443	405
13...	387	421	445	471	491	519	555	585
14...	871	877	887	893	919	925	933	941
15...	877	853	833	821	799	781	747	711
16...	229	279	277	277	277	253	229	199
17...	273	301	313	329	345	355	369	395
18...	829	849	853	863	871	878	887	905
19...	929	928	927	927	927	927	918	919
20...	735	729	721	713	709	687	675	641
21...	618	621	623	627	629	641	645	651
22...	701	705	705	704	695	709	721	713
23...	891	905	909	907	911	935	947	967
24...	135	155	173	175	175	177	181	183
25...	255	271	293	301	305	297	301	303
26...	148	149	128	105	105	093	091	069
27...	468	429	399	353	305	305	295	253

TYPO-BAROGRAPH.

MARCH, 1870.

DATE.	16*h*.	17*h*.	18*h*.	19*h*.	20*h*.	21*h*.	22*h*.	23*h*.
1...	447	453	461	475	487	513	519	526
2...	781	801	829	857	887	909	913	919
3...	005	007	009	011	014	985	955	945
4...	911	835	851	871	888	917	915	917
5...	961	967	979	991	999	999	985	971
6...	689	677	661	643	635	633	631	619
7...	623	629	633	645	663	671	673	675
8...	769	785	799	811	831	829	833	823
9...	807	807	815	815	809	785	763	733
10...	845	861	867	871	879	897	883	858
11...	791	801	803	813	827	809	809	803
12...	381	331	285	269	227	181	144	115
13...	609	651	686	721	757	775	788	809
14...	947	967	989	005	007	007	993	991
15...	669	623	577	531	485	449	413	399
16...	169	169	171	173	185	175	173	171
17...	399	437	465	493	533	565	601	621
18...	915	933	963	987	993	997	001	005
19...	918	917	925	929	925	909	893	877
20...	611	605	593	593	581	569	563	545
21...	663	667	677	695	701	691	689	683
22...	721	723	725	741	754	763	777	777
23...	987	011	031	053	047	051	045	043
24...	189	209	229	261	265	263	265	269
25...	305	307	311	319	315	327	319	299
26...	047	025	002	979	956	918	883	831
27...	177	179	176	175	181	229	227	231
28...	518	544	576	608	629	660	680	691
29...	928	948	968	997	010	010	006	996
30...	062	066	070	076	078	074	066	062
31...	048	048	050	066	072	066	050	034

DATE.	REMARKS.
March 22.	Cloudy; wind W.
" 23.	Cloudy; changeable; wind W.
" 24.	Cloudy; wind N. E.
" 25.	Clear; wind S. W.
" 26.	Clear; cloudy; wind N. E.
" 27.	Sprinkle of rain and snow; wind S. E.
" 28.	Cloudy; rain; fall of water $0^{in}.55$; wind N.
" 29.	Changeable; wind N.
" 30.	Changeable; wind E.
" 31.	Changeable; wind N.

TYPO-BAROGRAPH.

April, 1870.

Date.	0h.	1h.	2h.	3h.	4h.	5h.	6h.	7h.
1...	30.017	995	981	964	965	967	969	971
2...	29.825	793	769	751	733	725	727	733
3...	29.709	705	699	694	702	719	741	758
4...	29.681	678	653	643	613	591	571	542
5...	29.577	591	597	611	623	634	654	661
6...	29.694	691	678	671	670	681	696	705
7...	29.775	767	755	759	761	767	775	791
8...	29.871	867	857	853	851	855	863	871
9...	29.939	923	911	891	887	887	889	897
10...	29.985	965	953	929	921	917	919	919
11...	29.809	790	765	755	751	751	733	717
12...	29.487	483	475	475	487	525	555	581
13...	29.824	811	805	799	795	801	803	813
14...	29.747	721	695	684	687	688	689	691
15...	29.885	884	887	883	891	923	961	997
16...	30.121	089	076	069	043	033	024	031
17...	29.873	845	814	813	809	805	793	775
18...	29.513	493	491	479	469	457	437	443
19...	29.477	479	479	475	473	465	457	467
20...	29.445	443	441	437	437	447	453	475
21...	29.547	547	546	549	549	533	573	597
22...	29.773	767	761	753	751	749	749	761
23...	29.825	821	807	799	800	801	803	821
24...	29.815	797	777	757	731	715	665	663
25...	29.879	879	878	873	873	887	903	935
26...	29.971	959	949	927	915	909	909	911
27...	29.819	795	765	735	709	693	687	685
28...	29.501	495	493	555	597	641	661	681
29...	29.889	867	851	825	807	803	791	787
30...	29.805	785	757	733	717	715	709	691

Date. **REMARKS.**

April 1. Changeable; wind N.
" 2. Changeable; clear; wind N. E.
" 3. Cloudy; snow; wind N.
" 4. Cloudy; snow; wind N.
" 5. Cloudy; rain; fall of water $0^{in}.10$; wind N.
" 6. Rain; cloudy; fall of water $0^{in}.40$; wind N.
" 7. Changeable; wind W.
" 8. Clear; wind N.
" 9. Clear; wind N.
" 10. Changeable; wind N.

TYPO-BAROGRAPH.

APRIL, 1870.

DATE.	8*h*.	9*h*.	10*h*.	11*h*.	12*h*.	13*h*.	14*h*.	15*h*.
1...	973	974	981	978	955	948	939	933
2...	741	745	743	738	713	705	687	685
3...	769	773	767	751	743	729	711	711
4...	531	513	503	473	453	443	413	407
5...	675	681	689	691	693	693	685	675
6...	722	725	722	721	720	720	720	713
7...	795	805	815	817	827	831	833	837
8...	887	889	893	909	917	923	925	933
9...	913	917	925	927	929	959	947	951
10...	921	931	933	931	927	925	921	917
11...	709	689	653	617	599	581	563	555
12...	623	644	673	695	701	719	731	759
13...	824	835	839	838	837	836	835	833
14...	699	717	725	733	739	747	753	763
15...	021	044	069	887	105	114	119	125
16...	035	063	077	083	083	067	047	027
17...	765	751	723	705	695	685	673	651
18...	495	475	455	469	461	461	457	457
19...	471	471	467	457	443	437	433	425
20...	491	503	511	515	513	511	511	513
21...	611	637	643	643	667	671	675	689
22...	775	793	795	795	805	807	809	811
23...	834	853	855	869	867	871	871	872
24...	674	683	693	689	669	671	687	685
25...	975	005	009	019	031	035	043	053
26...	921	924	927	923	923	921	917	913
27...	683	681	683	681	671	661	657	647
28...	729	757	779	781	791	799	807	815
29...	803	811	817	831	841	845	843	841
30...	705	721	725	727	721	711	691	679

DATE. REMARKS.

April 11. Rain; cloudy; fall of water $0^{\text{in}}.20$; wind N.
" 12. Clear; wind N. E.
" 13. Changeable; wind S. W.
" 14. Changeable; wind N.
" 15. Changeable; wind S. E.
" 16. Clear; changeable; wind S.
" 17. Cloudy; sprinkle of rain; wind E.
" 18. Cloudy; showers of rain; fall of water $1^{\text{in}}.30$.
" 19. Cloudy; rain; fall of water $0^{\text{in}}.35$; wind S.
" 20. Rain; fall of water $0^{\text{in}}.10$; wind S.

TYPO-BAROGRAPH.

APRIL, 1870.

DATE.	16*h*.	17*h*.	18*h*.	19*h*.	20*h*.	21*h*.	22*h*.	23*h*.
1...	919	905	899	902	897	893	869	841
2...	691	699	713	725	727	737	732	715
3...	705	729	727	723	727	717	707	693
4...	413	427	452	487	511	537	550	563
5...	677	681	701	711	713	713	699	711
6...	712	717	734	753	766	781	799	787
7...	841	859	883	891	893	893	891	885
8...	944	953	963	965	967	971	967	957
9...	971	981	007	017	033	029	013	009
10...	916	907	899	897	891	885	861	833
11...	523	521	521	521	521	519	521	520
12...	767	799	809	845	851	853	851	835
13...	833	839	851	855	843	815	801	775
14...	765	775	795	815	841	853	877	884
15...	135	157	163	173	183	167	161	137
16...	011	003	995	995	984	965	936	913
17...	641	625	613	605	581	573	563	531
18...	441	441	435	441	455	463	461	475
19...	415	415	425	429	435	443	445	445
20...	513	519	523	533	537	543	547	547
21...	709	731	761	775	793	799	797	785
22...	813	815	818	821	827	831	837	833
23...	873	875	875	881	883	881	859	843
24...	694	731	757	813	835	855	871	889
25...	055	055	055	063	065	035	015	012
26...	909	901	901	903	899	901	883	847
27...	635	627	615	609	591	589	579	537
28...	833	847	867	891	893	897	899	897
29...	841	847	853	857	859	857	851	833
30...	665	656	669	679	701	719	724	731

DATE.	REMARKS.
April 21.	Cloudy; rain; fall of water $0^{in}.14$; wind N.
" 22.	Changeable; wind S.
" 23.	Clear; wind S.
" 24.	Cloudy; rain; wind N. E.
" 25.	Changeable; wind S. W.
" 26.	Clear; wind S.
" 27.	Clear; cloudy; wind S. W.
" 28.	Clear; cloudy; wind N. E.
" 29.	Clear; hazy; wind S.
" 30.	Clear; wind N. W.

TYPO-BAROGRAPH.

May, 1870.

Date.	0*h*.	1*h*.	2*h*.	3*h*.	4*h*.	5*h*.	6*h*.	7*h*.
1...	29.727	737	751	765	783	803	827	849
2...	30.071	065	045	027	001	989	981	975
3...	29.814	785	746	703	679	663	641	627
4...	29.357	346	343	339	371	407	445	495
5...	29.735	707	681	655	631	623	623	627
6...	29.539	491	453	404	377	357	349	346
7...	29.291	304	303	303	329	331	349	387
8...	29.452	441	428	411	412	413	418	427
9...	29.525	527	529	533	545	559	579	601
10...	29.723	731	731	727	724	721	723	729
11...	29.741	730	719	708	697	686	675	665
12...	29.627	626	627	629	630	630	631	631
13...	29.639	631	605	601	601	608	615	635
14...	29.697	692	685	661	643	633	631	634
15...	29.702	693	672	667	661	655	649	649
16...	29.636	607	590	569	564	561	566	605
17...	29.860	869	869	873	878	883	897	905
18...	30.019	019	998	983	971	961	959	963
19...	29.933	915	885	845	829	817	811	805
20...	29.883	851	847	839	841	845	849	853
21...	29.863	848	825	807	775	785	789	801
22...	30.011	989	971	959	947	941	943	963
23...	29.907	885	865	845	811	791	789	799
24...	29.598	589	583	581	575	567	561	562
25...	29.657	655	657	659	661	663	665	687
26...	29.808	803	785	775	773	767	775	779
27...	29.855	837	825	817	813	807	803	807
28...	29.731	719	713	711	707	699	697	693
29...	29.781	779	776	773	774	775	777	781
30...	29.935	931	919	917	913	909	909	928
31...	30.055	038	021	007	999	985	983	984

Date. **Remarks.**

May 1. Clear; wind E.
" 2. Clear; wind S.
" 3. Cloudy; wind S. E.
" 4. Changeable; wind E.
" 5. Clear; wind S.
" 6. Changeable; rain; wind N.
" 7. Cloudy; sprinkle of rain; wind N.
" 8. Showers of rain; fall of water for 3 days, $0^{in}.60$.
" 9. Cloudy; showers of rain; wind S.
" 10. Cloudy; rain; fall of water for 9th and 10th, $0^{in}.40$; wind S.
" 11. Rain; fall of water $0^{in}.20$; wind W.

TYPO-BAROGRAPH.

May, 1870.

Date.	8*h*.	9*h*.	10*h*.	11*h*.	12*h*.	13*h*.	14*h*.	15*h*.
1...	885	917	935	957	977	993	005	015
2...	973	975	977	975	969	963	953	949
3...	621	615	603	588	573	543	523	507
4...	543	587	631	663	679	699	721	733
5...	649	659	663	665	663	651	641	639
6...	343	339	333	311	303	295	285	271
7...	405	425	427	429	437	427	423	429
8...	429	446	447	442	443	446	447	457
9...	615	631	637	639	643	647	655	665
10...	741	751	753	757	759	749	741	735
11...	655	645	641	635	625	607	605	599
12...	631	642	649	661	662	663	663	664
13...	649	662	669	683	687	683	675	673
14...	661	685	687	691	692	697	703	707
15...	663	675	677	677	681	677	673	677
16...	634	653	674	685	702	706	712	713
17...	923	941	949	965	969	971	971	973
18...	967	985	005	011	015	011	015	013
19...	839	890	869	857	861	865	866	867
20...	865	893	899	909	918	927	928	933
21...	807	829	845	847	855	867	887	897
22...	981	013	025	025	025	018	015	008
23...	783	785	781	747	698	681	671	655
24...	564	565	575	585	605	607	609	613
25...	705	728	737	741	745	749	752	755
26...	785	808	817	825	827	841	845	846
27...	821	847	853	851	831	817	803	799
28...	687	691	693	695	697	699	701	703
29...	789	805	811	819	829	841	851	857
30...	951	975	987	993	005	009	011	013
31...	985	987	989	987	985	973	967	961

Date.		Remarks.
May	12.	Changeable; wind W.
"	13.	Changeable; shower of rain; wind N. E.
"	14.	Clear; wind W.
"	15.	Clear; wind S.
"	16.	Changeable; showers of rain; wind S. W.
"	17.	Changeable; wind S. W.
"	18.	Clear; wind S. W.
"	19.	Cloudy; 8*h*. to 13*h*. thunder and lightning; rain; wind S. W.
"	20.	Clear; wind S. W.
"	21.	Cloudy; rain; fall of water $0^{in}.20$; wind N. W.

TYPO-BAROGRAPH.

MAY, 1870.

DATE.	16h.	17h.	18h.	19h.	20h.	21h.	22h.	23h.
1...	027	045	067	073	085	093	091	081
2...	945	942	938	934	931	903	881	857
3...	489	467	465	463	455	441	419	387
4...	783	734	759	773	774	777	775	761
5...	629	625	623	625	614	605	587	565
6...	257	249	255	257	267	281	283	285
7...	427	427	439	451	457	457	461	455
8...	464	479	495	503	511	519	523	523
9...	667	683	697	699	711	719	721	723
10...	721	721	723	733	739	741	744	741
11...	595	595	601	612	629	633	633	631
12...	665	666	667	669	671	673	661	657
13...	673	683	689	694	701	703	701	697
14...	715	721	733	732	737	735	727	719
15...	681	685	681	677	675	673	667	651
16...	724	737	761	781	806	823	842	851
17...	977	999	017	027	045	047	033	025
18...	013	017	023	027	018	998	981	958
19...	869	873	885	887	911	913	907	895
20...	933	949	951	953	949	935	931	893
21...	909	947	975	007	023	023	022	015
22...	001	998	998	995	988	981	965	943
23...	653	655	659	653	647	629	617	611
24 ..	617	621	625	639	649	649	647	657
25...	767	779	787	789	798	807	809	815
26...	847	859	865	869	875	885	887	865
27...	791	790	789	788	787	771	751	743
28...	706	709	729	739	755	771	779	781
29...	877	897	907	925	935	937	937	937
30...	027	049	063	073	079	079	075	071
31...	960	959	955	949	943	921	911	897

DATE.	REMARKS.
May 22.	Changeable; wind S. W.
" 23.	Cloudy; shower of rain; wind S.
" 24.	Cloudy; shower; fall of water $0^{in}.20$; wind W.
" 25.	Changeable; wind S. W.
" 26.	Changeable; wind N. E.
" 27.	Changeable; wind N. E.
" 28.	Cloudy; showery; wind S.
" 29.	Changeable; sprinkle of rain; fall of water $0^{in}.20$; wind S.
" 30.	Changeable; wind S.
" 31.	Changeable; wind S.

TYPO-BAROGRAPH.

June, 1870.

Date.	0h.	1h.	2h.	3h.	4h.	5h.	6h.	7h.
1...	29.873	852	829	820	809	788	781	780
2...	29.729	722	717	704	691	688	688	691
3...	29.824	819	816	810	809	808	808	812
4...	29.863	839	825	813	797	789	787	783
5...	29.791	777	753	731	717	709	703	701
6...	29.735	719	701	687	677	681	713	715
7...	29.819	815	797	797	795	795	793	791
8...	29.759	755	741	739	739	725	721	731
9...	29.717	679	657	651	651	647	661	669
10...	29.753	745	727	723	723	721	725	737
11...	29.765	755	745	735	725	716	707	707
12...	29.849	846	843	839	839	841	843	845
13...	29.863	843	831	817	789	775	767	764
14...	29.713	677	671	659	657	641	641	641
15...	29.663	655	647	639	633	631	641	679
16...	29.705	697	681	669	669	659	659	667
17...	29.717	719	721	727	723	723	723	717
18...	29.735	711	707	695	683	677	677	685
19...	29.763	749	735	713	697	681	680	679
20...	29.573	569	565	541	525	525	513	553
21...	29.761	763	763	775	789	799	829	839
22...	29.963	947	925	897	887	887	897	907
23...	29.915	901	887	873	859	841	841	845
24...	29.907	888	863	858	839	830	825	821
25...	29.836	809	786	767	744	739	737	735
26...	29.823	817	813	809	799	805	813	827
27...	29.779	755	721	697	661	653	655	661
28...	29.653	647	625	615	607	587	585	583
29...	29.701	683	655	639	619	609	603	601
30...	29.539	511	481	461	437	421	421	421

Date. **REMARKS.**

June 1. Changeable; wind S. W.
" 2. Changeable; wind S.
" 3. Clear; wind S. W.
" 4. Changeable; wind S. W.
" 5. Changeable; sprinkle of rain; wind S. W.
" 6. Cloudy; shower; wind S.
" 7. Rain; cloudy; fall of water $1^{in}.87$; wind N. W.
" 8. Changeable; wind S.
" 9. Cloudy; gale from S. E.
" 10. Rain; cloudy; fall of water $0^{in}.35$; wind E.

TYPO-BAROGRAPH.

JUNE, 1870.

DATE.	8h.	9h.	10h.	11h.	12h.	13h.	14h.	15h.
1...	779	779	778	778	778	777	772	771
2...	712	731	734	744	754	765	774	779
3...	822	833	838	841	845	850	854	859
4...	784	785	786	787	791	793	795	797
5...	705	709	711	712	713	713	714	714
6...	747	761	767	777	781	785	788	791
7...	785	782	779	776	773	765	759	753
8...	731	741	745	753	751	749	747	745
9...	679	693	695	701	703	705	707	707
10...	741	757	761	763	761	761	761	761
11...	713	737	741	741	741	735	747	737
12...	847	863	865	869	877	875	873	865
13...	763	763	762	759	753	747	721	727
14...	647	653	663	669	671	673	679	681
15...	685	703	709	707	697	701	701	701
16...	681	695	697	701	704	707	707	707
17...	727	741	743	751	753	755	759	763
18...	705	721	725	737	745	747	747	753
19...	678	677	676	674	672	671	661	647
20...	561	559	559	569	581	593	599	631
21...	863	877	887	899	901	913	919	937
22...	917	927	939	945	951	951	943	939
23...	863	885	895	897	907	911	913	917
24...	821	836	841	844	849	858	858	848
25...	741	757	769	775	775	775	773	763
26...	833	855	857	851	851	851	851	851
27...	687	695	695	695	697	689	673	671
28...	583	605	607	609	612	619	619	635
29...	609	633	639	645	639	615	609	607
30...	423	447	459	467	475	485	489	503

DATE. **REMARKS.**

June 11. Changeable; rain.
" 12. Changeable; rain; fall of water $0^{\text{in}}.15$; wind W.
" 13. Rain; cloudy; fall of water $0^{\text{in}}.80$; wind S.
" 14. Rain; changeable; fall of water $2^{\text{in}}.65$.
" 15. Rain; fall of water $0^{\text{in}}.10$; wind S. E.
" 16. Rain; cloudy; fall of water $0^{\text{in}}.30$; wind S.
" 17. Rain; clear; wind S.
" 18. Clear; wind S. E.
" 19. Clear; wind S.
" 20. Rain and hail; changeable; fall of water $0^{\text{in}}.90$; wind W.

TYPO-BAROGRAPH.

June, 1870.

Date.	16*h*.	17*h*.	18*h*.	19*h*.	20*h*.	21*h*.	22*h*.	23*h*.
1...	771	770	769	768	767	762	757	746
2...	784	803	814	823	828	835	836	831
3...	864	879	887	897	897	895	889	875
4...	799	801	807	809	811	813	807	803
5...	715	723	732	739	739	745	745	743
6...	795	799	821	829	831	831	829	823
7...	751	751	755	759	763	765	765	763
8...	743	749	755	757	757	755	745	737
9...	708	709	711	721	727	745	749	753
10...	761	765	775	781	783	787	783	773
11...	739	765	795	825	831	837	839	847
12...	865	867	869	869	869	867	869	871
13...	727	745	759	759	761	759	745	729
14...	683	687	691	694	697	697	679	673
15...	701	701	705	713	719	719	719	715
16...	707	709	709	711	715	715	715	715
17...	767	777	781	781	781	771	757	747
18...	759	763	773	791	793	791	791	785
19...	647	646	646	646	645	639	629	603
20...	643	679	708	723	739	743	755	757
21...	947	963	983	995	001	001	995	979
22...	949	963	967	971	983	983	953	941
23...	921	941	945	947	947	947	928	917
24...	851	864	869	873	878	881	870	857
25...	769	777	787	803	815	823	829	833
26...	853	850	850	847	845	833	821	801
27...	671	671	675	675	677	667	657	655

TYPO-BAROGRAPH.

July, 1870.

Date.	0*h*.	1*h*.	2*h*.	3*h*.	4*h*.	5*h*.	6*h*.	7*h*.
1...	29.672	673	674	677	679	683	687	708
2...	29.870	850	850	840	828	812	808	808
3...	29.824	806	792	790	790	786	784	782
4...	29.810	798	788	768	752	742	738	736
5...	29.760	752	748	716	714	708	712	722
6...	29.780	762	748	732	720	708	696	694
7...	29.596	572	538	522	508	492	474	470
8...	29.556	564	570	582	586	594	608	634
9...	29.828	826	830	826	820	826	830	840
10...	29.886	878	866	848	836	828	824	824
11...	29.840	830	810	796	784	764	750	742
12...	29.636	632	612	594	586	570	570	568
13...	29.668	672	642	626	618	610	604	604
14...	29.544	530	548	546	546	554	562	588
15...	29.774	772	758	758	756	754	758	768
16...	29.824	804	784	762	744	728	718	708
17...	29.658	668	668	664	652	644	648	642
18...	29.701	684	671	672	631	624	633	644
19...	29.743	735	733	727	727	721	721	729
20 ..	29.789	771	747	743	727	697	709	743
21...	29.751	755	753	753	747	743	749	761
22...	29.917	907	885	865	845	845	829	813
23...	29.867	803	797	811	797	781	771	763
24..	29.763	733	685	661	633	613	627	641
25...	29.775	751	737	735	727	715	719	725
26...	29.783	767	745	721	701	695	689	665
27...	29.767	761	747	747	745	731	717	727
28...	29.731	707	689	665	637	623	629	613
29...	29.513	511	537	551	553	555	577	603
30...	29.777	779	785	795	803	807	819	819
31...	29.911	897	879	859	835	825	817	815

Date. Remarks.

July 1. Cloudy; changeable; wind S. E.
" 2. Clear; rain; fall of water $0^{in}.30$; wind S.
" 3. Clear; wind S.
" 4. Clear; wind S.
" 5. Clear; wind S. E.
" 6. Changeable; wind S.
" 7. Cloudy; rain; fall of water $2^{in}.00$; wind S. W.
" 8. Clear; wind W.
" 9. Clear; wind S.
" 10. Clear; wind S.

TYPO-BAROGRAPH.

JULY, 1870.

Date.	8h.	9h.	10h.	11h.	12h.	13h.	14h.	15h.
1...	727	758	771	782	793	794	802	804
2...	818	830	832	832	828	826	820	820
3...	782	792	804	806	804	800	798	798
4...	744	766	782	788	788	784	784	772
5...	738	752	760	768	772	774	774	774
6...	702	714	718	720	714	708	692	680
7...	460	452	434	410	448	464	484	484
8...	654	678	684	692	704	706	708	710
9...	848	870	876	876	882	882	886	892
10...	832	856	874	880	876	872	872	872
11...	728	730	722	720	706	674	668	634
12...	566	556	564	602	606	614	620	622
13...	596	606	608	608	618	620	618	608
14...	604	630	644	670	684	686	678	678
15...	788	814	822	828	838	844	842	852
16...	712	716	732	720	706	704	680	670
17...	662	680	680	684	692	692	694	694
18...	647	664	673	682	687	688	687	688
19...	763	777	787	797	809	807	807	809
20...	743	743	741	731	717	705	703	703
21...	785	809	833	849	859	875	883	889
22...	819	839	851	863	859	843	835	833
23...	761	787	803	803	797	795	797	801
24...	635	661	685	701	709	713	713	713
25...	733	757	771	773	777	783	787	781
26...	679	685	689	671	667	675	687	673
27...	739	751	753	755	753	751	747	743
28...	613	623	625	617	603	595	577	575
29...	627	655	673	685	693	699	701	701
30...	829	855	871	891	905	913	923	927
31...	811	815	827	829	831	831	829	829

Date.		Remarks.
July	11.	Cloudy; rain; fall of water $0^{in}.50$; wind S. W.
"	12.	Changeable; rain; fall of water $0^{in}.32$; wind W.
"	13.	Changeable; wind S.
"	14.	Rain; changeable; fall of water $0^{in}.23$; wind W.
"	15.	Changeable; wind S. E.
"	16.	Heavy rain showers; cloudy; fall of water $1^{in}.55$; wind N. W.
"	17.	Clear; wind W.
"	18.	Clear; wind N. E.
"	19.	Clear; wind S.
"	20.	Changeable; rain; fall of water $0^{in}.26$; wind W.

TYPO-BAROGRAPH.

July, 1870.

Date.	16*h*.	17*h*.	18*h*.	19*h*.	20*h*.	21*h*.	22*h*.	23*h*.
1...	812	830	842	848	860	874	878	872
2...	822	834	838	838	836	828	826	826
3...	804	814	832	836	838	832	830	828
4...	766	774	782	786	788	794	778	760
5...	780	788	796	804	808	802	802	792
6...	680	682	682	678	676	652	636	618
7...	488	498	510	528	542	548	552	556
8...	722	740	766	784	804	812	822	824
9...	894	908	918	922	926	920	908	898
10...	872	873	874	878	880	874	870	862
11...	610	610	618	626	626	628	632	634
12...	628	634	646	662	676	682	680	680
13...	602	600	598	598	592	580	572	566
14...	700	714	732	738	752	762	764	772
15...	850	856	866	850	848	844	838	838
16...	666	652	652	672	672	664	664	666
17...	700	716	714	726	718	714	706	706
18...	699	712	729	740	747	747	747	750
19...	817	835	847	847	843	837	827	811
20...	727	735	691	709	735	745	747	753
21...	893	907	917	933	941	937	923	925
22...	845	855	849	849	857	865	863	889
23...	813	823	827	825	817	811	789	773
24...	717	735	751	758	767	769	769	767
25...	777	779	791	809	813	813	813	811
26...	671	685	709	735	737	739	747	765
27...	741	741	743	743	743	747	745	741
28...	573	563	555	551	551	545	539	525
29...	699	717	749	759	759	761	771	777
30...	935	943	949	963	965	963	949	933
31...	829	827	823	823	825	810	807	789

Date.	Remarks.
July 21.	Clear; wind S.
" 22.	Clear; changeable; wind S. E.
" 23.	Clear; wind S. E.; thunder shower; fall of water 0^{in}.53.
" 24.	Changeable; wind W.
" 25.	Changeable; wind N. W.
" 26.	Cloudy; rain; fall of water 0^{in}.83; wind N. E.
" 27.	Cloudy; rain.
" 28.	Cloudy; rain; fall of water 0^{in}.57; wind S.
" 29.	Rain; changeable; fall of water 0^{in}.10; wind N. W.
" 30.	Clear; wind S. W.
" 31.	Clear; wind S. E.

TYPO-BAROGRAPH.

AUGUST, 1870.

DATE.	0*h*.	1*h*.	2*h*.	3*h*.	4*h*.	5*h*.	6*h*.	7*h*.
1...	29.769	752	743	740	729	706	697	696
2...	29.688	685	685	682	678	677	677	689
3...	29.762	740	724	704	708	650	660	662
4...	29.624	610	618	596	598	598	598	596
5...	29.564	556	552	552	550	552	560	568
6...	29.684	676	674	666	662	660	650	648
7...	29.783	772	767	754	749	748	749	752
8...	29.845	830	817	808	807	800	795	812
9...	29.819	799	777	819	785	773	815	815
10...	29.869	863	841	833	825	817	817	833
11...	29.891	877	866	853	849	847	843	845
12...	29.747	751	759	775	767	767	771	783
13...	29.847	847	843	833	827	821	821	825
14...	29.819	817	791	781	763	759	763	767
15...	29.859	843	831	823	813	803	803	801
16...	29.785	759	747	719	707	701	693	685
17...	29.643	631	625	607	589	585	585	593
18...	29.729	729	729	715	713	713	719	729
19...	29.781	753	747	739	717	707	699	695
20...	29.769	775	773	787	797	815	827	851
21...	30.008	993	978	967	967	968	969	972
22...	30.021	991	983	959	955	959	957	957
23...	29.909	883	871	861	859	853	839	827
24...	29.803	793	789	779	771	761	761	761
25...	29.655	627	583	557	533	531	527	575
26...	29.923	927	929	925	933	955	967	993
27...	30.171	149	125	103	091	081	073	067

TYPO-BAROGRAPH.

AUGUST, 1870.

DATE.	8*h*.	9*h*.	10*h*.	11*h*.	12*h*.	13*h*.	14*h*.	15*h*.
1...	696	696	691	684	671	662	659	659
2...	710	728	750	760	760	761	767	770
3...	658	644	642	644	648	640	636	628
4...	594	604	608	608	608	608	606	606
5...	586	604	618	628	630	630	628	628
6...	646	656	666	674	680	686	702	708
7...	771	790	807	814	823	828	841	848
8...	821	850	851	861	857	853	837	849
9...	821	839	831	837	829	823	819	819
10...	851	863	863	867	867	863	863	863
11...	851	851	855	859	861	843	833	833
12...	793	801	815	817	821	815	813	813
13...	837	845	841	837	829	829	829	829
14...	774	781	788	795	802	809	816	822
15...	809	813	827	831	833	833	833	833
16...	679	685	683	683	681	681	675	671
17...	609	619	629	631	633	647	657	661
18...	747	759	767	773	779	791	791	793
19...	701	709	713	715	717	713	709	709
20...	887	911	928	935	942	942	942	949
21...	989	989	002	012	005	004	997	006
22...	961	961	959	955	957	953	949	943
23...	829	837	843	843	819	815	805	805
24...	765	763	759	757	741	741	743	745
25...	583	583	595	597	621	641	687	729
26...	031	061	081	097	117	121	127	129
27...	063	065	065	065	063	053	053	047
28...	870	860	850	840	830	820	810	799
29...	531	533	527	523	555	565	555	559
30...	759	769	775	785	787	787	787	795
31...	781	789	791	793	803	801	795	793

DATE.	REMARKS.
Aug. 11.	Rain; cloudy; wind N. W.
" 12.	Rain; changeable; fall of water $0^{in}.20$; wind N. W.
" 13.	Rain; changeable; fall of water $1^{in}.03$; wind N.
" 14.	Clear; wind S. E.
" 15.	Clear; wind S.
" 16.	Changeable; wind S.
" 17.	Clear; wind E.
" 18.	Clear; wind S. E.
" 19.	Clear; rain; wind S. E.; fall of water $0^{in}.60$.
" 20.	Cloudy; wind S. E.

TYPO-BAROGRAPH.

August, 1870.

Date.	16*h*.	17*h*.	18*h*.	19*h*.	20*h*.	21*h*.	22*h*.	23*h*.
1...	659	668	673	678	681	682	682	685
2...	778	792	798	802	806	796	790	772
3...	626	630	630	640	648	644	646	630
4...	614	620	630	625	628	618	600	582
5...	638	662	670	680	682	682	686	686
6...	718	724	744	760	764	774	784	788
7...	853	860	869	880	879	868	867	856
8...	855	863	863	865	863	859	855	835
9...	831	839	849	865	869	871	871	871
10...	869	871	879	895	899	897	899	895
11...	833	831	829	825	815	815	793	781
12...	815	829	847	849	857	857	861	855
13...	829	829	829	829	829	829	827	830
14...	831	837	845	853	861	871	875	875
15...	833	833	837	839	829	825	821	813
16...	671	673	679	683	681	673	663	655
17...	667	677	697	715	717	727	731	731
18...	813	829	835	837	827	825	817	807
19...	709	707	707	713	725	737	757	769
20...	964	983	004	019	020	015	016	017
21...	005	012	027	039	043	037	033	027
22...	947	949	955	953	953	949	945	929
23...	807	817	821	825	825	825	827	821
24...	735	725	725	727	729	719	707	685
25...	753	787	823	845	855	879	889	911
26...	149	153	177	197	201	201	199	193
27...	041	039	037	037	037	035	025	010

TYPO-BAROGRAPH.

SEPTEMBER, 1870.

DATE.	0*h*.	1*h*.	2*h*.	3*h*.	4*h*.	5*h*.	6*h*.	7*h*.
1...	29.822	793	778	764	760	750	748	742
2...	29.750	728	718	702	688	684	682	686
3...	29.638	614	598	584	566	546	536	528
4...	29.470	466	460	470	476	512	534	542
5...	29.802	805	799	787	797	824	846	855
6...	29.995	978	969	960	952	950	959	973
7...	30 085	070	057	036	019	008	013	022
8...	30.198	182	166	139	130	124	120	108
9...	30.026	010	974	944	926	900	892	892
10...	29.834	822	804	788	788	798	816	844
11...	29.986	970	946	940	938	938	952	988
12...	30.138	124	100	088	074	066	066	074
13...	30.174	156	132	108	096	088	086	086
14...	30.106	090	060	038	024	016	006	004
15...	29.920	894	864	846	824	820	816	824
16...	29.898	899	900	902	904	926	936	952
17...	30.020	008	988	978	972	972	962	962
18...	29.764	744	726	734	740	750	774	800
19...	30.056	052	024	018	010	010	010	016
20...	30.124	106	092	088	080	078	082	090
21...	30.220	210	172	156	154	132	130	128
22...	30.110	084	054	028	012	002	992	990
23...	29.868	856	830	812	808	806	816	818
24...	29.778	766	762	756	742	744	752	752
25...	29.736	740	750	760	774	768	796	826
26...	29.998	972	962	946	944	938	934	936
27...	29.910	882	872	870	862	856	856	861
28...	29.946	930	928	898	898	900	896	904
29...	29.988	972	962	962	960	958	958	962
30...	29.976	960	918	880	844	824	798	778

DATE.	REMARKS.
Sept. 1.	Clear; wind S.
" 2.	Cloudy; wind N.
" 3.	Cloudy; showers.
" 4.	Rain; changeable; wind W.; fall of water 1^{in}.64.
" 5.	Clear; wind N. W.
" 6.	Changeable; wind N. W.
" 7.	Clear; wind S. E.
" 8.	Clear; wind S.
" 9.	Changeable; rain; wind N. E.; fall of water 0^{in}.30.
" 10.	Changeable; wind W.

TYPO-BAROGRAPH.

September, 1870.

Date.	8h.	9h.	10h.	11h.	12h.	13h.	14h.	15h.
1...	754	754	766	780	780	782	786	788
2...	691	692	692	692	696	698	690	682
3...	526	522	516	510	506	496	472	468
4...	568	588	600	612	636	642	648	662
5...	877	886	888	905	911	911	913	935
6...	989	008	014	015	019	019	026	034
7...	049	070	092	113	114	114	119	132
8...	122	122	122	122	122	118	104	096
9...	896	898	898	898	884	858	828	818
10...	872	902	912	940	944	942	938	942
11...	026	044	056	064	068	074	080	088
12...	094	106	122	140	138	150	150	164
13...	098	106	106	110	110	122	122	122
14...	004	006	006	002	000	992	984	984
15...	826	828	840	840	842	842	838	838
16...	972	982	982	986	994	996	002	008
17...	962	956	942	940	926	898	878	864
18...	828	844	854	864	882	896	910	928
19...	026	034	056	064	074	078	084	090
20...	104	120	132	140	148	164	170	174
21...	138	144	146	148	150	160	158	159
22...	988	984	984	984	978	970	956	942
23...	818	818	818	816	814	806	794	786
24...	754	754	754	750	748	748	747	746
25...	848	860	880	891	902	916	924	930
26...	944	942	944	944	940	940	934	934
27...	866	868	870	875	880	880	882	884

TYPO-BAROGRAPH.

September, 1869.

Date.	16*h*.	17*h*.	18*h*.	19*h*.	20*h*.	21*h*.	22*h*.	23*h*.
1...	788	784	792	792	788	784	778	764
2...	682	682	682	686	688	688	674	660
3...	462	464	466	474	476	476	476	474
4...	678	698	724	734	762	780	794	800
5...	940	956	981	997	011	016	016	016
6...	046	067	093	096	098	100	100	095
7...	141	168	185	198	205	212	213	213
8...	092	092	092	092	092	090	070	054
9...	818	812	804	802	798	808	822	830
10...	948	968	988	002	006	012	014	008
11...	090	106	128	144	146	160	160	146
12...	170	182	202	218	218	218	218	198
13...	126	130	146	160	162	162	146	130
14...	984	984	990	002	004	990	974	948
15...	840	844	858	864	876	884	894	896
16...	010	016	028	036	040	042	042	042
17...	856	846	846	828	820	820	810	782
18...	936	950	978	006	022	046	052	058
19...	092	100	126	134	144	148	146	136
20...	180	202	224	244	252	260	256	240
21...	160	162	164	178	174	170	158	136
22...	940	940	940	939	938	934	924	898
23...	780	778	780	792	802	804	794	782
24...	742	740	746	760	768	768	768	762
25...	948	964	978	994	010	020	020	012
26...	940	942	942	946	948	952	946	932
27...	890	902	924	942	950	960	962	952
28 ..	944	962	966	984	986	996	996	992
29...	008	016	018	016	016	022	018	994
30...	574	576	580	591	604	622	626	632

Date.	Remarks.
Sept. 21.	Clear; wind S. E.
" 22.	Clear; hazy; wind S.
" 23.	Cloudy; wind S. E.
" 24.	Rain; wind N. E.
" 25.	Rain; wind N. W.; fall of water 1^{in}.37.
" 26.	Changeable; wind W.
" 27.	Changeable; wind S. W.
" 28.	Cloudy; wind S. W.
" 29.	Cloudy; rain; wind E.
" 30.	Rain; cloudy; fall of water 1^{in}.61; wind S. W.

TYPO-BAROGRAPH.

OCTOBER, 1870.

DATE.	0*h*.	1*h*.	2*h*.	3*h*.	4*h*.	5*h*.	6*h*.	7*h*.
1...	29.634	633	626	647	692	715	740	765
2...	29.940	916	906	896	884	884	886	884
3...	29.680	638	610	582	572	562	554	554
4...	29.534	516	512	512	512	520	532	562
5...	29.830	830	822	812	822	844	868	884
6...	30.108	094	092	094	104	114	130	148
7...	30.172	144	134	120	106	106	102	090
8...	30.088	070	050	045	024	018	014	030
9...	30.030	012	002	984	970	968	972	980
10...	30.002	968	944	922	904	888	884	884
11...	29.706	706	682	662	646	638	636	626
12...	29.452	434	416	410	408	406	420	428
13...	29.522	512	492	492	492	494	522	536
14...	29.786	780	772	774	784	786	798	810
15...	29.958	932	922	920	920	934	946	966
16...	30.078	044	020	016	004	996	996	004
17...	29.970	950	924	910	894	878	872	856
18...	29.606	624	664	676	692	726	756	786
19...	29.874	848	824	810	796	796	792	768
20...	29.258	254	242	202	204	202	170	182
21...	29.646	642	644	640	638	656	688	694
22...	29.926	920	926	942	956	994	030	080
23...	30.406	384	364	356	352	350	348	350
24...	30.214	184	154	128	108	090	084	076
25...	29.830	788	754	734	718	708	706	746
26...	30.122	126	130	148	164	192	220	250
27...	30.096	064	000	938	892	834	794	744

TYPO-BAROGRAPH.

OCTOBER, 1870.

DATE.	8*h*.	9*h*.	10*h*.	11*h*.	12*h*.	13*h*.	14*h*.	15*h*.
1...	778	801	814	833	844	855	874	879
2...	880	892	892	892	868	846	842	820
3...	554	548	544	540	530	516	514	516
4...	588	606	614	636	644	670	684	688
5...	908	924	932	942	950	960	962	966
6...	160	162	170	170	169	168	166	164
7...	084	096	102	096	088	086	080	080
8...	032	040	044	046	050	052	058	060
9...	988	994	996	996	000	004	008	010
10...	872	868	864	852	844	840	836	828
11...	626	622	614	598	588	566	558	530
12...	438	448	450	464	470	486	490	496
13...	562	578	594	604	612	636	644	654
14...	826	842	864	878	878	892	902	910
15...	988	004	010	016	030	046	050	052
16...	006	018	024	016	010	012	014	010
17...	834	812	788	760	718	678	646	616
18...	800	818	838	838	826	846	852	864
19...	766	766	702	650	644	612	580	550
20...	214	266	314	336	360	404	432	468
21...	706	720	722	730	740	768	776	800
22...	092	128	148	170	196	214	244	266
23...	346	346	354	350	342	342	340	330
24...	067	058	049	040	031	022	013	004
25...	772	800	818	830	830	848	864	876
26...	278	284	284	286	286	286	282	284
27...	708	692	662	630	610	610	630	640
28...	814	814	812	804	794	780	780	770
29...	996	004	016	036	040	054	076	086
30...	890	856	796	740	672	604	562	528
31..	526	546	564	588	608	634	650	664

DATE. REMARKS.

Oct. 12. Changeable; rain; wind S.
" 13. Changeable; wind W.
" 14. Clear; wind S. W.
" 15. Clear; wind S.
" 16. Changeable; wind S.
" 17. Cloudy; rain; fall of water $0^{\text{in}}.10$; wind S. W.
" 18. Cloudy; clear; wind S.
" 19. Cloudy; rain; fall of water $0^{\text{in}}.20$; wind S.
" 20. Rain; wind W.; earthquake at 11 A. M.; rain; fall of water $1^{\text{in}}.10$; wind E.
" 21. Clear; wind S.

TYPO-BAROGRAPH.

October, 1870.

Date.	16h.	17h.	18h.	19h.	20h.	21h.	22h.	23h.
1...	892	918	922	952	962	964	964	960
2...	812	810	814	810	792	766	722	690
3...	518	518	526	532	532	542	544	546
4...	708	722	742	764	782	800	804	814
5...	984	008	032	050	080	088	104	106
6...	164	180	196	220	232	234	220	190
7...	084	084	094	112	120	124	122	108
8...	060	064	064	064	068	070	060	046
9...	010	014	018	028	044	044	034	030
10...	826	810	802	798	796	798	760	722
11...	524	512	494	492	494	500	478	472
12...	502	488	518	530	560	570	560	544
13...	688	708	726	750	766	770	774	792
14...	914	928	942	958	984	980	978	956
15...	072	082	090	118	126	126	116	094
16...	006	008	008	006	016	022	002	996
17...	594	548	508	456	452	502	526	578
18...	872	892	910	916	934	916	922	910
19...	508	490	464	434	396	342	288	314
20...	490	524	546	584	608	640	646	648
21...	808	832	854	880	914	918	926	928
22...	280	316	336	364	404	410	412	416
23...	328	330	328	324	322	316	282	256
24...	995	986	968	960	944	922	900	874
25...	904	932	962	000	052	088	108	122
26...	290	300	294	273	252	230	186	148
27...	654	676	688	714	728	740	734	714
28...	768	768	770	784	798	812	812	810
29...	100	116	128	126	150	152	132	128
30...	474	434	414	416	428	428	432	436
31...	682	708	726	756	792	808	824	826

Date.		Remarks.
Oct.	22.	Changeable; wind W.
"	23.	Clear; wind S.
"	24.	Clear; wind S.
"	25.	Rain; changeable; wind N.; fall of water $0^{in}.04$.
"	26.	Clear; wind S.
"	27.	Showers; changeable; fall of water $0^{in}.35$; gale from S. E.
"	28.	Changeable; wind W.
"	29.	Clear; wind W.
"	30.	Cloudy; showers; fall of water $0^{in}.40$; wind S.
"	31.	Showers; cloudy; fall of water $0^{in}.13$; wind W.

TYPO-BAROGRAPH.

NOVEMBER, 1870.

DATE.	0*h*.	1*h*.	2*h*.	3*h*.	4*h*.	5*h*.	6*h*.	7*h*.
1...	29.825	804	803	800	799	791	786	781
2...	29.744	707	678	645	626	617	620	620
3...	29.390	442	444	444	454	482	498	516
4...	29.828	816	810	806	802	808	800	800
5...	29.844	862	880	898	916	934	952	970
6...	30.204	186	156	132	130	130	134	130
7...	30.026	016	020	026	038	050	054	072
8...	29.916	872	826	794	754	722	728	720
9...	29.534	478	444	464	472	498	504	526
10...	29.958	964	964	970	972	976	984	014
11...	29.874	830	792	766	766	768	784	794
12...	29.590	564	558	556	548	552	558	558
13...	29.566	548	536	558	584	600	622	634
14...	29.486	444	410	372	336	342	348	336
15...	29.596	590	590	594	596	598	602	606
16...	29.760	756	758	768	792	812	826	850
17...	29.968	946	932	924	924	924	922	920
18...	29.734	718	716	708	704	712	722	722
19...	29.614	610	612	614	624	624	646	652
20...	29.838	814	800	786	784	792	790	792
21...	29.840	840	850	888	906	946	970	002
22...	30.146	120	078	056	028	002	964	920
23...	29.386	388	404	422	450	478	492	510
24...	29.706	704	714	728	760	774	794	826
25...	29.844	804	786	766	744	724	696	680
26...	29.428	432	444	454	466	490	508	514
27...	29.530	522	530	554	580	606	640	669
28...	29.964	932	924	916	912	910	910	906
29...	29.776	786	794	810	842	884	920	928
30...	30.156	126	108	116	126	130	134	126

DATE. **REMARKS.**

Nov. 1. Clear; wind S.
" 2. Changeable; wind S.
" 3. Changeable; rain; thunder and lightning; gale from W.; fall of water $0^{\text{in}}.80$.
" 4. Changeable; sprinkle of rain; wind W.
" 5. Clear; wind N. E.
" 6. Clear; wind W.
" 7. Changeable; wind S.
" 8. Cloudy; wind S.
" 9. Rain; changeable; fall of water $0^{\text{in}}.46$; wind W.
" 10. Clear; wind W.

TYPO-BAROGRAPH.

November, 1870.

Date.	8h.	9h.	10h.	11h.	12h.	13h.	14h.	15h.
1...	776	781	788	785	788	789	789	794
2...	613	600	582	562	542	534	524	504
3...	544	578	602	626	660	680	694	720
4...	788	764	766	764	756	750	744	738
5...	989	008	044	070	094	118	150	160
6...	114	106	084	068	050	050	030	014
7...	072	090	084	080	084	080	082	072
8...	706	690	676	664	652	638	612	614
9...	558	594	606	616	618	618	646	652
10...	034	022	030	008	010	008	010	004
11...	768	754	746	736	728	728	722	686
12...	554	551	548	544	536	536	548	550
13...	620	616	610	606	612	610	604	606
14...	352	362	386	414	442	470	490	488
15...	608	614	608	610	616	628	636	642
16...	874	886	896	910	914	928	936	948
17...	916	908	914	914	908	886	878	860
18...	732	736	748	740	734	724	712	698
19...	672	688	706	718	736	770	792	806
20...	790	798	792	796	810	814	828	816
21...	030	048	072	084	096	126	130	148
22...	844	764	690	652	536	498	460	440
23...	522	548	558	570	576	606	616	650
24...	848	856	870	880	912	916	916	922
25...	650	632	574	554	524	494	486	454
26...	522	534	528	518	518	508	518	522
27...	698	728	758	774	806	830	854	890
28...	910	904	896	886	882	866	850	850

TYPO-BAROGRAPH.

NOVEMBER, 1870.

DATE.	16*h*.	17*h*.	18*h*.	19*h*.	20*h*.	21*h*.	22*h*.	23*h*.
1...	794	794	794	797	808	809	802	785
2...	484	464	440	424	410	406	382	384
3...	740	768	786	812	818	844	840	838
4...	738	750	758	766	784	802	814	826
5...	166	202	216	234	250	244	246	234
6...	004	012	012	020	026	028	034	028
7...	052	050	050	048	018	012	004	964
8...	602	600	574	596	582	564	558	528
9...	654	700	766	830	884	920	950	960
10...	000	000	996	992	990	974	950	926
11...	680	680	672	668	670	660	642	616
12...	554	556	558	568	576	592	574	572
13...	608	598	596	592	584	566	556	526
14...	508	516	534	556	568	588	596	594
15...	646	656	692	704	724	748	764	752
16...	952	952	970	988	004	008	010	996
17...	844	840	844	838	828	804	800	770
18...	686	678	672	674	678	674	668	648
19...	826	842	854	864	868	874	878	852
20...	806	820	824	826	834	846	860	842
21...	136	154	176	202	208	212	190	172
22...	386	376	370	370	372	368	362	388
23...	650	678	690	716	722	724	718	718
24...	926	922	930	924	912	904	894	876
25...	452	432	384	392	396	410	430	432
26...	518	516	536	530	550	548	550	554
27...	896	912	930	950	970	992	012	988
28...	836	832	822	808	810	806	796	794
29...	058	080	096	124	136	158	170	172
30...	006	980	966	958	956	938	914	878

DATE.	REMARKS.
Nov. 21.	Rain; changeable; fall of water $0^{in}.16$; wind N.
" 22.	Rain; cloudy; fall of water $0^{in}.63$; wind S.
" 23.	Sprinkle of rain; wind W.
" 24.	Cloudy; wind S.
" 25.	Clear; cloudy; rain; snow; fall of water $0^{in}.21$; wind W.
" 26.	Rain; cloudy; fall of water $0^{in}.20$; wind S.
" 27.	Clear; wind S. W.
" 28.	Clear; cloudy; wind E.
" 29.	Rain; changeable; fall of water $0^{in}.10$; wind W.
" 30.	Clear; wind S.

TYPO-BAROGRAPH.

December, 1870.

Date.	0*h*.	1*h*.	2*h*.	3*h*.	4*h*.	5*h*.	6*h*.	7*h*.
1...	29.825	794	757	728	705	690	671	644
2...	29.432	402	398	398	408	412	410	426
3...	29.733	708	712	708	716	722	732	742
4...	29.530	490	472	490	502	516	546	560
5...	29.674	640	606	574	558	538	514	490
6...	29.316	318	352	362	396	432	446	478
7...	29.736	706	672	656	640	630	600	580
8...	29.422	422	432	452	470	492	516	544
9...	29.888	898	896	910	928	948	960	982
10...	30.026	024	012	028	038	042	050	066
11...	30.258	230	218	210	210	192	188	188
12...	29.912	872	838	824	810	804	804	818
13...	29.730	708	698	692	690	686	676	674
14...	29.488	480	478	476	476	474	482	494
15...	29.632	634	638	666	676	680	684	716
16...	29.838	828	848	860	872	892	908	916
17...	29.784	742	712	686	670	652	632	614
18...	29.620	634	638	656	666	704	738	764
19...	29.896	874	862	848	834	810	782	764
20...	29.304	314	344	356	372	372	374	374
21...	29.620	651	672	693	714	749	774	817
22...	29.982	981	980	979	978	969	984	971
23...	29.755	735	715	701	691	677	681	691
24...	29.791	795	797	807	823	847	869	891
25...	30.261	251	251	259	253	243	235	229
26...	29.883	865	869	881	895	908	921	935
27...	29.951	917	869	851	841	817	807	799

TYPO-BAROGRAPH.

December, 1870.

Date.	8h.	9h.	10h.	11h.	12h.	13h.	14h.	15h.
1...	627	600	579	576	555	540	518	502
2...	428	426	422	434	438	468	512	518
3...	720	720	714	708	712	712	712	700
4...	582	598	620	630	642	646	664	670
5...	460	432	418	386	340	338	316	308
6...	529	552	588	614	638	674	682	696
7...	574	544	512	502	472	448	434	430
8...	570	592	604	626	652	668	694	710
9...	988	998	998	018	018	018	028	030
10...	076	076	094	110	130	148	176	188
11...	180	158	186	156	118	108	098	068
12...	836	832	812	804	788	770	776	780
13...	668	650	648	632	616	590	582	568
14...	496	492	484	488	500	510	514	520
15...	736	746	750	752	750	740	782	778
16...	928	928	920	916	906	910	914	916
17...	592	576	558	538	520	506	504	504
18...	780	792	800	820	834	854	882	896
19...	752	710	656	626	530	492	456	418
20...	378	386	384	398	396	392	398	408
21...	842	867	878	885	906	917	932	941
22...	956	953	958	951	940	947	914	905
23...	693	695	701	707	705	709	721	733
24...	901	919	941	979	005	027	071	103
25...	227	211	187	171	133	109	095	037
26...	949	963	977	991	005	003	011	021
27...	781	763	749	733	721	711	711	689
28...	601	601	603	587	585	569	565	565
29...	729	751	767	777	781	791	819	835
30...	593	567	537	525	507	501	507	499
31...	571	583	601	617	623	641	683	717

Date.	Remarks.
Dec. 12.	Rain; fall of water $0^{in}.58$; wind N. W.
“ 13.	Cloudy; wind W.
“ 14.	Cloudy; wind W.
“ 15.	Cloudy; wind W.
“ 16.	Cloudy; wind N. W.
“ 17.	Cloudy; wind N. W.
“ 18.	Clear; wind N. E.
“ 19.	Cloudy; snow; rain; fall of water $0^{in}.34$; wind S.
“ 20.	Cloudy; wind S. W.
“ 21.	Clear; wind S. W.

TYPO-BAROGRAPH.

December, 1870.

Date.	16*h*.	17*h*.	18*h*.	19*h*.	20*h*.	21*h*.	22*h*.	23*h*.
1...	492	470	464	470	470	468	472	454
2...	564	592	620	654	670	706	738	748
3...	676	658	656	660	657	626	588	560
4...	682	700	700	722	720	748	736	702
5...	288	282	280	294	294	296	312	318
6...	716	722	750	780	778	792	794	762
7...	424	424	422	422	424	426	432	430
8...	724	744	760	790	832	856	880	874
9...	026	030	040	042	046	050	068	044
10...	190	192	198	218	236	262	282	270
11...	088	080	032	988	944	974	994	954
12...	778	764	760	764	760	760	758	738
13...	548	542	534	522	520	520	518	504
14...	526	536	582	598	620	644	658	656
15...	780	784	804	832	846	868	874	858
16...	906	892	898	896	886	880	876	840
17...	512	518	538	548	570	590	612	626
18...	890	888	912	902	946	974	952	922
19...	352	310	304	280	280	296	298	304
20...	420	434	472	492	524	560	594	604
21...	938	939	948	969	000	005	018	003
22...	856	839	836	833	830	827	823	799
23...	729	735	747	761	783	799	803	799
24 ..	119	153	183	201	223	249	267	265
25...	019	995	981	981	977	985	947	915
26...	009	007	009	035	047	047	025	993
27...	679	663	661	667	667	659	653	645

TYPO-BAROGRAPH—DAILY MEAN RESULTS.

1866.

DATE.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
	in.	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*
1........	29.984	29.430	30.091	29.884	29.364	29.895	30.056	29.579	29.697	29.957	29.822	29.912
2........	30.036	29.532	29.955	30.022	29.473	29.754	29.969	29.611	29.725	29.674	29.978	30.079
3........	29.763	29.609	29.803	30.005	29.559	29.684	29.747	29.736	29.820	29.859	30.162	29.972
4........	29.858	30.023	29.776	29.905	29.511	29.682	29.657	29.632	29.733	30.178	30.347	29.653
5........	30.099	30.267	29.810	29.815	29.610	29.659	29.762	29.685	29.742	30.345	30.380	30.089
6........	30.377	30.453	29.766	29.958	29.821	29.498	29.731	29.724	....	30.153	30.221	29.876
7........	30.788	30.162	29.660	29.923	29.944	29.534	29.704	29.731	29.622	29.914	29.959	29.787
8........	30.741	29.842	29.794	29.956	29.628	29.837	29.697	29.590	29.741	29.890	29.858	29.486
9........	30.388	29.897	29.834	30.102	29.622	29.941	29.964	29.572	29.964	30.083	29.857	29.541
10........	29.935	29.862	30.025	30.075	29.743	29.905	29.975	29.814	29.887	30.053	29.860	29.764
11........	29.872	29.871	29.833	29.954	29.709	29.923	29.913	....	....	29.925	29.788	29.844
12........	29.644	29.790	30.003	29.830	29.646	....	29.737	29.926	29.561	29.826	30.024	29.882
13........	29.641	29.967	30.188	30.019	29.521	....	29.702	29.824	29.789	29.820	30.171	29.895
14........	30.220	29.525	29.985	29.828	....	29.588	29.810	29.743	29.785	29.979	30.020	30.166
15........	30.035	30.005	29.620	30.000	29.626	29.580	29.802	29.871	30.123	30.095	29.357	30.141
16........	29.668	30.446	29.492	30.218	29.718	29.677	29.829	29.959	29.998	29.905	29.277	29.479
17........	29.694	30.310	29.769	30.299	29.744	29.511	29.728	29.835	29.742	29.855	29.670	29.717
18........	....	29.765	29.763	30.067	29.672	29.472	29.643	29.699	29.673	29.982	29.797	29.992
19........	29.769	29.548	29.924	29.926	29.618	29.741	29.891	29.572	29.776	29.988	29.563	29.929
20........	29.790	30.071	29.729	29.651	29.469	29.873	29.891	29.685	29.732	29.891	29.406	30.472
21........	29.882	30.353	29.705	29.426	29.456	29.755	29.717	29.627	29.741	29.813	29.654	30.387
22........	30.016	30.212	30.036	29.450	29.673	29.692	29.549	29.627	30.044	29.665	29.632	29.868
23........	30.138	29.928	29.697	28.913	29.837	29.754	29.662	29.599	30.134	29.635	29.765	29.327
24........	30.094	29.677	29.535	29.103	29.719	29.857	29.771	29.739	30.071	29.787	29.802	29.424
25........	29.681	30.334	29.513	29.357	29.587	29.817	29.835	....	29.835	30.057	30.101	29.729
26........	29.836	30.493	29.920	29.600	29.488	....	29.852	29.745	29.855	29.881	30.072	29.660
27........	30.043	30.303	....	29.724	29.173	29.606	29.708	29.793	30.030	29.984	29.961	29.009
28........	29.955	30.277	....	....	29.301	29.779	29.567	29.780	30.112	....	29.699	29.480
29........	29.892	....	....	....	29.424	29.873	29.573	29.689	....	29.627	29.458	29.909
30........	29.600	....	....	29.676	29.556	29.985	29.665	29.723	29.931	29.494	29.612	30.165
31........	29.427	....	29.536	....	29.927	....	29.722	29.791	....	29.903	....	30.075

RAPH—DAILY MEAN RESULTS.

1867.

May.	June.	July.	August.	September.	October.	November.	December.
in.	in.	in.	in.	in.	in.	in.	in.
.....	29.848	....	29.777	29.744	29.656	29.525	30.079
0.050	29.567	29.725	....	29.937	29.477	29.562	29.819
0.241	29.423	29.645	29.897	29.864	29.855	29.487	29.635
0.085	29.669	....	29.979	29.865	29.948	....	29.594
9.835	29.809	29.725	29.961	29.821	....	30.013	29.748
9.663	29.722	29.579	29.963	29.839	30.071	30.130	29.367
9.469	29.799	29.724	29.932	30.130	30.219	30.010	29.673
9.076	29.908	....	29.893	30.094	30.030	29.795	29.872
9.379	29.943	29.821	29.850	29.778	29.603	29.806	29.833
9.577	....	29.860	29.882	29.866	29.452	29.834	29.717
9.716	29.960	29.688	29.903	29.909	....	29.656	29.863
......	29.796	29.789	29.701	29.765	29.642	29.436	29.896
9.523	29.861	30.062	29.623	29.737	29.762	....	30.062
9.329	29.859	30.084	29.798	30.174	29.790	....	30.009
.....	....	29.886	29.828	30.163	29.888	29.842	29.656
9.623	29.866	29.837	29.532	30.027	29.990	....	29.555
9.678	29.841	29.894	29.548	....	29.702	29.571	....
9.834	29.783	29.877	29.661	29.948	29.712	29.854	30.089
9.800	29.973	29.793	29.777	29.931	29.938	30.025	30.331
9.692	30.027	29.611	29.811	29.867	30.057	29.915	30.052
9.471	29.993	....	29.772	29.948	29.933	30.102	30.060
9.379	29.972	....	29.742	29.944	29.918	30.155	29.414
9.545	29.826	29.738	29.639	30.240	30.225	29.997	....
9.819	29.740	29.622	29.720	29.963	30.278	29.998	29.956
9.731	29.868	29.605	29.928	....	30.192	29.809	29.734
9.744	29.890	29.703	29.922	29.889	30.152	29.905	29.807
9.880	29.755	29.750	29.765	29.829	30.187	29.887	29.496
9.721	29.879	29.566	29.583	29.706	30.024	29.799	29.842
......	29.790	29.753	29.684	29.636	29.622	....	30.074
9.695	29.528	29.988	29.968	29.833	29.537	29.903	30.333
9.858	....	29.971	29.779	....	29.759	....	30.091

TYPO-BAROGRAPH—DAILY MEAN RESULTS.

1868.

DATE.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
	in.	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*
1	29.226	30.257	29.571	29.458	29.897	29.820	....	29.458	29.897	30.144	29.624	....
2	29.443	30.094	29.444	29.590	29.818	29.912	29.939	29.481	30.014	30.027	29.830	....
3	29.549	30.310	29.775	29.577	29.825	30.061	29.909	29.702	30.085	30.064	....	30.108
4	29.694	30.175	30.101	29.491	29.668	30.113	29.813	29.912	29.822	29.844	29.674	29.913
5	30.049	29.750	30.368	29.827	29.534	29.906	29.869	29.998	29.803	29.527	29.755	29.855
6	29.972	29.576	30.118	29.830	29.557	29.765	29.878	29.948	29.737	29.898	....	29.942
7	29.829	....	29.935	29.225	29.452	29.982	....	29.694	29.811	29.710	....	28.994
8	29.601	....	30.114	29.752	29.591	29.849	29.747	29.544	29.811	29.940	....	29.247
9	29.628	....	30.097	30.132	29.723	29.943	29.852	29.673	29.764	30.053	29.860	29.699
10	29.683	30.141	30.033	29.840	29.961	29.993	29.835	29.801	29.806	29.877	29.802	29.768
11	29.744	30.177	30.359	29.578	30.066	29.806	29.796	29.715	29.907	29.809	29.838	29.646
12	30.074	30.090	29.809	29.993	29.967	29.735	29.798	29.871	29.780	....	30.160	30.004
13	30.225	29.946	29.618	30.161	29.636	29.911	29.810	29.883	29.823	....	30.089	30.070
14	30.080	29.985	29.690	29.869	29.653	29.929	29.741	29.857	29.937	29.980	30.113	29.801
15	29.738	29.846	29.786	29.551	29.793	29.792	29.623	29.749	29.765	29.811	30.201	29.968
16	29.671	29.912	29.696	29.498	29.699	29.734	29.759	29.966	29.853	29.789	30.204	29.460
17	29.756	29.657	29.604	29.644	29.596	29.711	29.763	30.042	30.097	30.211	29.880	29.166
18	29.998	29.710	29.989	30.078	29.673	29.651	29.716	29.916	30.229	....	29.661	29.895
19	30.072	29.709	29.979	30 060	29.868	29.495	29.768	29.756	30.067	....	29.684	30.205
20	29.718	29.560	29.610	29.869	29.738	....	29.847	29.799	29.822	30.022	29.639	29.635
21	29.803	29.917	29.374	29.881	29.443	....	29.710	29.945	29.942	29.851	29.537	29.732
22	30.170	30.309	29.715	29.910	29.678	....	29.663	29.938	29.818	29.983	29.810	29.846
23	29.629	30.552	29.613	30.149	29.651	29.834	29.673	29.843	29 980	30.297	29.896	29.806
24	29.766	30.434	29.964	30.118	29.577	30.002	29.612	29.850	29.947	30.121	29.942	29.749
25	29.876	30.280	30.024	30.005	29.736	29.964	29.714	29 885	29.766	29.859	29.735	29.809
26	29.827	30.027	29.931	30.036	29.755	29 751	29.856	29.942	29.938	30.039	29.596	30.268
27	29.857	29.487	29.685	30.016	29.620	29.663	29.864	30.091	29.753	29.777	29.881	30.122
28	29.932	29.397	29.878	30.049	29.666	29.843	29.868	29.949	29.753	29.963	29.535	30.096
29	29.775	29.723	30.084	29 750	29.621	29.966	29.842	29.733	29.904	30.325	29.360	29.947
30	30.113	....	29.891	29.625	29.674	30.004	29.816	29.842	29.946	30.380	29.348	30.165
31	30.339	....	29.627	....	29.810	....	29.600	29.706	....	29.904	....	30.162

RAPH—DAILY MEAN RESULTS.

1869.

ay.	June.	July.	August.	September.	October.	November.	December.
in.	in.	in.	in.	in.	in.	in.	in.
9.498	29.882	29.823	30.091	30.062	29.975	29.948	29.904
9.154	29.974	29.654	29.723	30.089	29.819	30.131	29.876
9.329	29.908	29.562	29.612	30.037	29.587	29.975	30.108
9.541	29.625	29.774	29.612	29.952	29.315	29.677	29.813
9.754	29.673	30.063	29.780	29.917	29.786	29.513	29.960
9.808	30.047	30.085	29.948	29.891	29.971	29.430	29.912
9.794	29.997	29.930	30.015	29.650	30.058	29.277	30.084
9.703	30.085	29.755	29.986	29.408	30.075	29.460	30.339
9.672	30.022	29.687	29.892	29.758	29.950	29.575	30.421
9.731	29.739	29.631	29.791	29.866	29.643	29.686	30.141
9.617	29.616	29.686	29.835	29.980	29.625	29.730	29.954
9.553	29.691	29.867	29.902	30.093	29.530	29.839	29.950
9.389	29.462	29.874	29.866	30.158	29.519	29.825	30.296
9.211	29.401	29.821	29.842	30.088	29.618	29.777	30.273
9.306	29.585	29.650	29.652	29.940	29.655	29.927	30.013
9.314	29.850	29.595	29.823	29.936	29.623	29.822	29.773
9.528	29.945	29.686	29.921	30.116	29.636	29.299	29.842
9.639	29.741	29.679	29.874	30.152	29.814	29.750	29.277
9.534	29.826	29.762	29.729	29.991	29.750	29.610	29.752
9.724	29.596	29.674	29.666	29.910	29.805	29.515	30.168
9.651	29.644	29.680	29.803	30.013	29.746	29.918	30.177
9.646	29.719	29.858	29.974	30.082	29.825	29.920	29.598
9.734	29.821	29.885	30.046	30.139	29.524	29.891	30.100
9.736	29.881	29.832	29.933	30.118	29.977	30.181	30.308
9.633	29.954	29.792	29.710	29.870	30.164	30.158	30.244
9.745	29.819	29.703	29.886	29.627	29.895	29.925	29.951
9.968	29.692	29.690	29.833	29.928	29.787	29.716	29.715
9.849	29.587	29.645	29.593	30.129	29.459	29.931	29.585
9.879	29.651	29.710	29.683	30.137	29.556	29.768	29.646
9.805	29.667	29.978	29.768	30.069	29.840	29.463	29.644
9.698	....	30.169	29.904	....	29.936	....	29.920

TYPO-BAROGRAPH—DAILY MEAN RESULTS.

1870.

DATE.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
	in.	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*
1	29.766	29.864	29.457	29.943	29.937	29.786	29.771	29.694	29.776	29.819	29.794	29.586
2	29.010	29.880	29.730	29.731	29.967	29.757	29.830	29.742	29.692	29.847	29.546	29.509
3	29.387	30.248	29.981	29.734	29.575	29.847	29.806	29.660	29.516	29.553	29.634	29.690
4	29.603	30.308	29.843	29.527	29.602	29.803	29.774	29.608	29.619	29.644	29.782	29.619
5	29.927	30.032	29.956	29.668	29.641	29.727	29.763	29.616	29.903	29.946	30.070	29.415
6	29.805	30.000	29.764	29.721	29.330	29.766	29.700	29.700	30.023	30.160	30.078	29.590
7	29.903	29.910	29.610	29.823	29.399	29.777	29.501	29.814	30.110	30.106	30.048	29.523
8	29.888	29.242	29.730	29.910	29.457	29.745	29.688	29.840	30.115	30.051	29.674	29.639
9	30.076	29.351	29.804	29.948	29.631	29.698	29.872	29.829	29.876	30.006	29.645	29.994
10	29.916	29.691	29.756	29.917	29.736	29.755	29.863	29.863	29.910	29.855	29.990	30.130
11	30.061	29.589	29.782	29.633	29.648	29.759	29.703	29.841	30.052	29.582	29.730	30.118
12	29.778	29.641	29.504	29.676	29.650	29.859	29.617	29.807	30.142	29.474	29.558	29.798
13	30.166	29.941	29.482	29.823	29.661	29.768	29.610	29.832	30.124	29.622	29.590	29.613
14	30.325	29.486	29.904	29.753	29.692	29.672	29.651	29.812	30.050	29.872	29.456	29.528
15	29.756	29.766	29.753	30.053	29.672	29.687	29.813	29.826	29.852	30.022	29.643	29.750
16	30.015	30.189	29.204	30.032	29.688	29.696	29.709	29.692	29.979	30.014	29.896	29.891
17	29.836	29.847	29.345	29.704	29.953	29.747	29.684	29.650	29.910	29.720	29.884	29.596
18	30.295	29.314	29.846	29.463	29.997	29.737	29.689	29.774	29.879	29.812	29.706	29.811
19	30.222	29.819	29.925	29.451	29.871	29.673	29.786	29.723	30.072	29.626	29.739	29.572
20	29.852	29.680	29.691	29.496	29.899	29.615	29.731	29.911	30.156	29.383	29.812	29.419
21	30.168	29.660	29.618	29.659	29.885	29.891	29.840	30.002	30.159	29.761	29.643	29.862
22	30.018	29.624	29.709	29.794	29.988	29.939	29.855	29.959	29.980	30.174	29.675	29.916
23	29.938	29.469	29.919	29.847	29.734	29.902	29.800	29.836	29.808	30.339	29.575	29.728
24	29.894	29.506	30.154	29.742	29.602	29.855	29.705	29.749	29.754	30.036	29.851	30.009
25	29.493	29.446	30.280	29.985	29.732	29.780	29.769	29.682	29.885	29.866	29.573	30.123
26	29.792	29.553	30.087	29.915	29.825	29.834	29.707	30.074	29.946	30.233	29.509	29.969
27	30.039	29.360	29.395	29.668	29.808	29.685	29.745	30.066	29.894	29.758	29.776	29.750
28	30.008	29.343	29.456	29.746	29.717	29.637	29.605	29.835	29.942	29.786	29.872	29.580
29	29.580	....	29.871	29.835	29.840	29.620	29.659	29.601	29.990	30.023	29.991	29.760
30	29.816	....	30.032	29.714	29.992	29.505	29.879	29.775	29.706	29.710	30.049	29.561
31	29.643	....	30.043	....	29.975	....	29.832	29.800	....	29.606	....	29.641

TYPO-BAROGRAPH.

MEAN HOURLY RESULTS.

1866.

HOUR.	January.	February.	March.	April.	May.	June.
	in.	*in.*	*in.*	*in.*	*in.*	*in.*
0........	29.970	29.999	29.815	29.809	29.600	29.733
1........	.951	.978	.796	.796	.591	.725
2........	.943	.963	.781	.786	.584	.716
3........	m.937	m.958	m.758	.775	.575	.710
4........	.941	.959	.772	m.766	m.573	.707
5........	.950	.964	.783	.769	.579	.708
6........	.956	.968	.791	.779	.586	m.686
7........	.966	.979	.800	.782	.597	.711
8........	.971	.982	.812	.801	.608	.717
9........	$M_\bullet$.973	.988	$M_\circ$.813	.809	.619	.731
10........	.971	.993	.811	.817	$M_\circ$.620	.735
11........	.970	.993	.810	.821	.617	.738
12........	.964	.994	.808	$M_\circ$.821	.613	$M_\circ$.740
13........	.958	.994	.809	.820	.606	.737
14........	.961	.997	.808	.815	.602	$m_\bullet$.734
15........	.962	.997	$m_\bullet$.803	$m_\circ$.814	$m_\circ$.600	.734
16........	$m_\circ$.957	30.000	.804	.816	.601	.739
17........	.957	.012	.809	.823	.608	.746
18........	.961	.022	.813	.834	617	.755
19........	.968	.030	.824	M.843	.625	.763
20........	.972	.044	M.832	.843	M.627	.767
21........	.979	.048	.830	.840	.625	.772
22........	M.983	M.051	.829	.836	.622	M.772
23........	.971	.045	.829	.825	.618	.768

TYPO-BAROGRAPH.

Mean Hourly Results.

1866.

Hour.	July.	August.	September.	October.	November.	December.	Year.
	in.	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*
0....	29.781	29.723	29.842	29.913	29.848	29.829	29.822
1....	.769	.714	.828	.904	.838	.813	.808
2....	.760	.706	.818	.885	.831	.805	.798
3....	.753	.699	.815	.879	m.825	m.802	.791
4....	.748	.694	m.810	m.877	.829	.809	m.791
5....	m.743	m.692	.815	.881	.835	.811	.794
6....	.745	.698	.820	.888	.843	.815	.797
7....	.748	.707	.827	.896	.849	.821	.807
8....	.752	.717	.834	.905	$M_\bullet$.853	.820	.814
9....	.761	.724	.843	.911	.852	.822	.820
10....	.765	.726	.850	$M_\circ$.913	.852	.825	.823
11....	.768	.728	.851	.912	.848	$M_\circ$.825	$M_\circ$.823
12....	$M_\circ$.768	$M_\bullet$.729	$M_\bullet$.853	.913	.844	.817	.822
13....	.767	.725	.851	.911	.839	$m_\circ$.816	.819
14....	$m_\bullet$.765	.720	$m_\circ$.850	.909	.839	.822	.818
15....	.765	$m_\circ$.717	.852	$m_\circ$.906	.833	.826	$m_\circ$.817
16....	.770	.717	.856	.908	$m_\circ$.832	.824	.819
17....	.779	.724	.861	.912	.836	.826	.824
18....	.785	.732	.871	.920	.840	.836	.832
19....	.793	.737	.880	.929	.850	.844	.840
20....	M.794	.739	.882	.938	.859	.855	.846
21....	.793	.739	M.890	M.940	.860	.867	.848
22....	.791	M.740	.888	.939	M.863	M.872	M.849
23....	.783	.733	.878	.932	.854	.862	.841

Diurnal Maxima and Minima.

Month.	Min.	Max$_\bullet$.	Min$_\circ$.	Max.
July....................	5 P. M.	12 P. M.	2–3 A. M.	8 A. M.
August..................	5 "	12 "	3 "	10 "
September.............	4 "	12 "	2 "	9 "
October	4 "	10 "	3 "	9 "
November	3 "	8 "	4 "	10 "
December..............	3 "	11 "	1 "	10 "
Mean for all............	4 "	10–11 "	3 "	10 "
Spring..................	3 "	10 "	3 "	8 "
Summer	6 "	12 "	3 "	9 "
Autumn	4 "	10 "	3 "	10 "
Winter	3 "	10–11 "	3 "	10 "

TYPO-BAROGRAPH.

MEAN HOURLY RESULTS.

1867.

Hour.	January.	February.	March.	April.	May.	June.
	in.	*in.*	*in.*	*in.*	*in.*	*in.*
0........	29.704	29.907	29.868	29.717	29.680	29.832
1........	.690	.886	.857	.710	.672	.818
2........	m.686	.874	.849	.697	.668	.807
3........	.687	m.870	.844	.684	.656	.798
4........	.690	.871	m.842	m.677	m.654	.792
5........	.694	.872	.845	.680	.655	m.790
6........	.703	.873	.849	.685	.658	.794
7........	.708	.885	.854	.696	.668	.800
8........	M_o.712	.889	.861	.708	.679	.807
9........	.710	M_o.890	.862	.719	.690	.817
10........	.705	.883	M_o.864	.721	.692	.821
11........	.702	.875	.862	M_o.725	M_o.694	M_o.822
12........	.696	.870	.856	.724	.694	.822
13........	.690	m_o.867	.860	.720	.689	.821
14........	.690	.871	.852	.715	.685	.820
15........	.690	.870	m_o.848	m_o.713	m_o.683	.819
16........	.687	.875	.851	.713	.683	.821
17........	m_o.686	.886	.853	.715	.690	.828
18........	.689	.894	.857	.723	.701	.834
19........	.697	.905	.863	M.729	M.701	.841
20........	.707	.915	.870	.727	.701	M.845
21........	.711	M.922	M.872	.727	.697	.842
22........	M.714	.919	.870	.721	.687	.837
23........	.708	.917	.866	.712	.685	.831

TYPO-BAROGRAPH.

MEAN HOURLY RESULTS.

1867.

HOUR.	July.	August.	September.	October.	November.	December.	Year.
	in.	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*
0....	29.788	29.808	29.924	29.901	29.848	29.877	29.821
1....	.779	.800	.906	.875	.824	.856	.806
2....	.770	.789	.892	.862	m.818	.844	.797
3....	.761	.779	.877	.852	.819	.841	.789
4....	.754	.772	.869	m.847	.821	m.841	m.786
5....	m.750	.767	m.867	.851	.822	.842	.786
6....	.750	m.766	.869	.857	.829	.845	.790
7....	.756	.773	.880	.865	.832	.851	.797
8....	.764	.782	.892	.873	.833	$M_\bullet$.852	.804
9....	.775	.795	.900	.878	.837	.851	.810
10....	.778	.799	.906	.882	.837	.848	.811
11....	.779	.799	.906	.887	$M_\bullet$.839	.847	$M_\bullet$.811
12....	$M_\circ$.783	$M_\circ$.800	.908	.886	.834	.843	.810
13....	.781	.800	$M_\bullet$.911	$M_\circ$.891	.834	$m_\circ$.842	.809
14....	.779	.796	.911	.890	.833	.848	.807
15....	$m_\circ$.779	$m_\bullet$.795	$m_\bullet$.910	$m_\bullet$.890	$m_\bullet$.831	.851	$m_\circ$.807
16....	.784	.795	.915	.893	.831	.849	.808
17....	.792	.801	.923	.898	.834	.848	.813
18....	.801	.807	.932	.906	.836	.851	.819
19....	.808	.813	.940	.915	.846	.852	.826
20....	M.809	.814	.946	.925	.853	.856	.831
21....	.809	.816	M.948	M.926	.857	.859	M.832
22....	.803	M.818	.944	.919	M.858	M.862	.829
23....	.795	.807	.935	.910	.848	.851	.822

DIURNAL MAXIMA AND MINIMA.

MONTH.	Min.	Max$_\circ$.	Min$_\circ$.	Max.
July	5 P. M.	12 P. M.	3 A. M.	8 A. M.
August	6 “	12 “	3 “	10 “
September	5 “	1 A. M.	3 “	9 “
October	4 “	1 “	3 “	9 “
November	2 “	11 P. M.	3 “	10 “
December	4 “	8 “	1 “	10 “
Mean for all	4 “	11 “	3 “	9 “
Spring	4 “	11 “	3 “	8 “
Summer	6 “	12 “	3 “	9 “
Autumn	4 “	12 “	3 “	9 “
Winter	3 “	8 “	3 “	10 “

TYPO-BAROGRAPH.

MEAN HOURLY RESULTS.

1868.

HOUR.	January.	February.	March.	April.	May.	June.
	in.	*in.*	*in.*	*in.*	*in.*	*in.*
0	29.830	29.985	29.864	29.829	29.710	29.870
1	.806	.964	.851	.819	.701	.860
2	.795	.953	.838	.803	.692	.849
3	m.794	m.949	.833	.788	.685	.837
4	.801	.950	m.832	.780	m.684	.829
5	.801	.952	.836	m.774	.684	.821
6	.809	.960	.842	.781	.686	m.819
7	.823	.967	.851	.790	.693	.828
8	.829	.969	.855	.808	.701	.837
9	.832	M$_0$.970	.859	.814	.714	.848
10	.833	.968	M$_0$.860	M$_0$.815	M$_0$.717	.850
11	.835	.966	.859	.814	.716	.856
12	M$_0$.835	.962	.857	.813	.716	M$_0$.857
13	m$_0$.831	.957	.855	.811	.712	.855
14	.837	.957	.850	m$_0$.809	.709	m$_0$.854
15	.841	.955	m$_0$.846	.813	m$_0$.706	.855
16	.844	m$_0$.955	.848	.812	.708	.861
17	.843	.958	.853	.819	.713	.870
18	.844	.958	.860	.833	.720	.879
19	.853	.962	.868	.848	.723	.886
20	.862	.970	.873	.857	M.729	M.890
21	.869	.973	M.875	M.859	.725	.889
22	M.878	M.975	.870	.858	.722	.884
23	.878	.970	.862	.852	.717	.878

DIURNAL MAXIMA AND MINIMA.

MONTH.	Min.	Max$_0$.	Min$_0$.	Max.
January	3 P. M.	12 P. M.	1 A. M.	10 A. M.
February	3 "	9 "	4 "	10 "
March	4 "	10 "	3 "	9 "
April	5 "	10 "	2 "	9 "
May	4 "	10 "	3 "	8 "
June	6 "	12 "	2 "	8 "

TYPO-BAROGRAPH.

MEAN HOURLY RESULTS.

1868.

HOUR.	July.	August.	September.	October.	November.	December.	Year.
	in.	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*
0....	29.797	29.837	29.878	29.982	29.790	29.832	29.850
1....	.786	.828	.867	.972	.780	.822	.838
2....	.772	.814	.856	.958	.773	.814	.827
3....	.761	.799	.848	.953	m.771	m.812	.820
4....	.750	.789	m.844	m.951	.775	.813	.817
5....	m.749	.786	.845	.953	.780	.812	m.816
6....	.752	m.786	.847	.960	.788	.817	.820
7....	.760	.787	.858	.965	.792	.825	.828
8....	.767	.801	.871	.968	.799	.830	.836
9....	.777	.813	.881	M_0.969	.805	.833	.843
10....	.780	.815	.884	.967	M_0.807	M_0.833	.844
11....	.782	.816	.886	.964	.805	.830	M_0.844
12....	M_0.785	.818	.887	.961	.805	.823	.843
13....	.782	.819	M_0.888	.960	.803	.823	.841
14....	.782	.819	.886	.956	.803	.829	.841
15....	m_0.781	.819	m_0.886	m_0.955	.800	.833	m_0.841
16....	.785	.822	.889	.958	m_0.795	.828	.842
17....	.793	.831	.895	.963	.798	m_0.826	.847
18....	.801	.843	.904	.968	.801	.831	.853
19....	.807	.852	.913	.976	.805	.839	.861
20....	M.810	.859	.913	.982	.813	.843	.867
21....	.808	M.862	M.917	M.984	M.813	.853	M.868
22....	.804	.862	.914	.981	.811	M.863	.868
23....	.795	.856	.905	.975	.806	.860	.863

DIURNAL MAXIMA AND MINIMA.

MONTH.	Min.	Max_0.	Min_0.	Max.
July	5 P. M.	12 P. M.	3 A. M.	8 A. M.
August	6 "	....	....	9 "
September	4 "	1 A. M.	3 "	9 "
October	4 "	9 P. M.	3 "	9 "
November	3 "	10 "	4 "	9 "
December	3 "	10 "	5 "	10 "
Mean for all	5 "	11 "	3 "	9 "
Spring	4 "	10 "	3 "	9 "
Summer	6 "	12 "	3 "	8 "
Autumn	4 "	11 "	3 "	9 "
Winter	3 "	10 "	3 "	10 "

TYPO-BAROGRAPH.

MEAN HOURLY RESULTS.

1869.

HOUR.	January.	February.	March.	April.	May.	June.
	in.	*in.*	*in.*	*in.*	*in.*	*in.*
0........	29.777	29.685	29.856	29.689	29.620	29.773
1........	.763	.669	.841	.680	.607	.760
2........	.750	.662	.828	.672	.599	.748
3........	m.747	m.660	.821	.665	.594	.740
4........	.749	.665	m.812	m.663	.593	.734
5........	.753	.673	.814	.668	m.588	m.732
6........	.758	.694	.817	.673	.592	.735
7........	.765	.710	.827	.684	.599	.742
8........	.772	.718	.831	.698	.609	.753
9........	.776	.724	.833	.707	.620	.709
10........	.779	.733	.831	.707	.623	.776
11........	.780	.735	.832	.708	.624	M$_o$.780
12........	M$_o$.781	.740	.832	M$_o$.708	M$_o$.624	.780
13........	.778	.742	M$_o$.833	.701	.622	.779
14........	.782	M$_o$.742	.831	m$_o$.695	.618	.776
15........	.782	.735	m$_o$.827	.697	m$_o$.616	m$_o$.774
16........	.771	m$_o$.731	.828	.697	.620	.778
17........	m$_o$.767	.735	.833	.700	.628	.786
18........	.773	.736	.838	.711	.637	.793
19........	.781	.737	.846	M.714	.644	.800
20........	.789	.745	.852	.711	M.646	M.801
21........	.800	M.745	M.856	.713	·643	.798
22........	M.802	.742	.855	.710	.637	.793
23........	.799	.741	.848	.698	.632	.786

TYPO-BAROGRAPH.

Mean Hourly Results

1869.

Hour.	July.	August.	September.	October.	November.	December.	Year.
	in.	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*
0....	29.777	29.841	29.981	29.765	29.785	29.954	29.792
1....	.765	.830	.968	.748	.742	.940	.776
2....	.760	.819	.950	.736	m.737	.930	.766
3....	.755	.809	.941	.732	.738	m.929	.761
4....	.748	.801	.936	m.730	.745	.932	m.759
5....	m.746	m.799	m.935	.732	.751	.934	.760
6....	.749	.800	.937	.738	.759	.937	.766
7....	.757	.807	.946	.745	.764	.943	.774
8....	.765	.817	.954	.754	M_0.767	.944	.781
9....	.779	.823	.960	.759	.766	.945	.788
10....	.787	.826	.964	M_0.760	.765	.948	.791
11....	.790	.827	.964	.758	.760	.952	.792
12....	.791	M_0.829	.967	.758	.756	.951	M_0.792
13....	M_0.792	.829	.970	.758	.750	.952	.792
14....	.788	m_0.826	.970	.757	.749	.964	.791
15....	m_0.787	.826	.971	m_0.756	m_0.747	M_0.971	m_0.790
16....	.788	.827	.976	.758	.748	.969	.791
17....	.794	.836	.984	.760	.747	m_0.967	.794
18....	.801	.846	.995	.766	.751	.976	.802
19....	.805	.855	30.002	.775	.755	.984	.808
20....	M.809	.860	.007	.781	.763	.995	.813
21....	.806	M.860	M.009	M.784	.765	30.003	M.815
22....	.803	.855	.005	.782	M.770	M.007	.813
23....	.799	.846	29.995	.775	.763	29.992	.806

Diurnal Maxima and Minima.

Month.	Min.	Max_0.	Min_0.	Max.
July	5 P. M.	1 A. M.	3 A. M.	8 A. M.
August............... ..	5 "	12 P. M.	2 "	9 "
September.............	5 "	....	....	9 "
October	4 "	10 P. M.	3 A. M.	9 "
November....	2 "	8 "	3 "	10 "
December	3 "	3 A. M.	5 "	10 "
Mean of all............	4 "	12 P. M.	3 "	9 "
Spring	4 "	12 "	3 "	8 "
Summer...............	5 "	12 "	3 "	8 "
Autumn	4 "	10 "	3 "	9 "
Winter................	3 "	2 A. M.	5 "	10 "

TYPO-BAROGRAPH.

MEAN HOURLY RESULTS.

1870.

HOUR.	January.	February.	March.	April.	May.	June.
	in.	*in.*	*in.*	*in.*	*in.*	*in.*
0........	29.895	29.714	29.753	29.769	29.747	29.769
1........	.869	.690	.738	.757	.737	.755
2........	.852	.668	.722	.745	.724	.741
3........	.848	.660	m.719	.738	.713	.730
4........	m.844	m.663	.721	m.734	.707	.720
5........	.847	.666	.730	.736	m.704	m.713
6........	.847	.677	.741	.739	.707	.715
7........	.852	.685	.750	.746	.716	.720
8........	M_o.858	.688	.758	.759	.727	.728
9........	.854	.695	.765	.767	.743	.740
10........	.854	.699	.768	.770	.750	.744
11........	.856	.702	.769	M_o.770	.752	.748
12........	m_o.851	.705	.771	.768	M_o.753	.750
13........	.855	.706	.773	.767	.752	M_o.751
14........	.863	.713	M_o.773	.763	m_o.752	m_o.750
15........	.869	.714	.770	.762	.752	.752
16........	.872	.717	m_o.767	m_o.762	.753	.755
17........	.877	.726	.774	.768	.760	.763
18........	.885	.735	.780	.776	.768	.772
19........	.890	.744	.789	.786	.774	.779
20........	.903	.747	.794	.790	M.779	M.784
21........	.915	M.748	M.794	M.790	.778	.785
22........	M.921	.742	.789	.785	.773	.780
23........	.907	.731	.782	.775	.764	.773

TYPO-BAROGRAPH.

Mean Hourly Results.

1870.

Hour.	July.	August.	September.	October.	November.	December.	Year.
	in.	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*
0....	29.752	29.805	29.944	29.857	29.769	29.733	29.792
1....	.740	.792	.929	.841	.754	.719	.778
2....	.730	.782	.912	.829	.745	.711	.763
3....	.721	.772	.899	.820	m.744	m.711	.756
4....	.710	.765	.892	m.815	.748	.715	m.753
5....	.702	m.759	m.890	.820	.756	.717	.753
6....	m.702	.760	.892	.828	.764	.721	.758
7....	.706	.765	.898	.836	.770	.729	.764
8....	.714	.774	.909	.842	.773	.733	.772
9....	.730	.782	.915	.850	.775	.732	.779
10....	.738	.788	.919	.851	.775	.730	.782
11....	.743	.791	.924	M_o.854	.774	.731	M_o.784
12....	M_o.746	M_o.792	.925	.847	.774	.725	m_o.784
13....	.746	m_o.792	M_o.925	.850	.775	.724	.785
14....	.745	.792	m_o.922	.852	M_o.778	M_o.731	.786
15....	m_o.743	.795	.924	m_o.852	.777	.731	.787
16....	.746	.801	.927	.855	m_o.774	.728	.788
17....	.754	.808	.934	.861	.779	m_o.727	.794
18....	.761	.818	.946	.867	.784	.734	.802
19....	.768	.825	.955	.876	.792	.744	.810
20....	M.772	M.827	.960	.888	.798	.752	.816
21....	.771	.826	M.965	M.891	M.801	.765	M.819
22....	.767	.825	.962	.883	.799	M.768	.816
23....	.765	.819	.953	.876	.787	.753	.807

Diurnal Maxima and Minima.

Month.	Min.	Max_o.	Min_o.	Max.
July..................	6 P. M.	12 P. M.	3 A. M.	8 A. M.
August................	5 "	12 "	1 "	8 "
September.............	5 "	1 A. M.	2 "	9 "
October...............	4 "	11 P. M.	3 "	9 "
November..............	3 "	2 A. M.	4 "	9 "
December..............	3 "	2 "	5 "	10 "
Mean of all...........	4 "	11 P. M.	12 P. M.	9 "
Spring................	4 "	12 "	3 A. M.	9 "
Summer................	5 "	12 "	2 "	8 "
Autumn................	4 "	12 "	3 "	9 "
Winter................	4 "	11 "	3 "	9 "

TYPO-BAROGRAPH.

HOURLY RESULTS. MEAN OF FIVE YEARS.

HOUR.	January.	February.	March.	April.	May.	June.
	in.	*in.*	*in.*	*in.*	*in.*	*in.*
0 noon...	29.835	29.858	29.831	29.763	29.672	29.795
1........	.815	.837	.816	.753	.662	.784
2........	.806	.826	.803	.741	.654	.772
3........	m.803	m.819	.795	.731	.645	.763
4........	.805	.821	m.795	m.724	m.642	.757
5........	.809	.825	.800	.726	.642	.753
6	.814	.834	.806	.731	.645	m.749
7........	.822	.845	.812	.740	.654	.760
8........	.828	.849	.821	.755	.665	.768
9........	$\mathrm{M}_{\circ}$.829	.853	.826	.763	.677	.781
10........	.828	$\mathrm{M}_{\circ}$.855	.828	.766	.680	.785
11........	.829	.854	$\mathrm{M}_{\circ}$.829	$\mathrm{M}_{\circ}$.768	$\mathrm{M}_{\circ}$.681	.789
12 midnig't	.825	.853	.827	.767	.680	$\mathrm{M}_{\circ}$.790
13........	.822	$\mathrm{m}_{\circ}$.852	.829	.764	.677	.789
14........	.826	.855	.823	$\mathrm{m}_{\circ}$.759	.674	.787
15........	.829	.854	$\mathrm{m}_{\circ}$.821	.760	$\mathrm{m}_{\circ}$.671	$\mathrm{m}_{\circ}$.786
16........	.826	.855	.822	.760	.673	.791
17........	$\mathrm{m}_{\circ}$.826	.864	.827	.765	.680	.798
18...	.831	.869	.834	.775	.689	.806
19........	.838	.875	.842	.784	.693	.813
20........	.847	.884	.845	.784	M.697	M.818
21........	.855	M.887	M.847	M.786	.694	.817
22........	M.859	.886	.843	.782	.688	.813
23........	.853	.881	.836	.773	.683	.807

TYPO-BAROGRAPH.

HOURLY RESULTS. MEAN OF FIVE YEARS.

HOUR.	July.	August.	September.	October.	November.	December.
	in.	*in.*	*in.*	*in.*	*in.*	*in.*
0 noon	29.779	29.803	29.914	29.883	29.808	29.845
1	.768	.793	.895	.867	.788	.830
2	.759	.782	.885	.854	.780	.821
3	.750	.771	.876	.847	m.779	m.819
4	.742	.764	.870	m.844	.783	.822
5	m.738	m.761	m.870	.847	.789	.823
6	.740	.762	.873	.854	.797	.827
7	.745	.768	.882	.861	.801	.834
8	.752	.778	.892	.868	.805	.835
9	.764	.788	.900	.873	.807	.837
10	.769	.790	.905	.874	M_0.807	.837
11	.773	.793	.906	M.874	.805	M_0 837
12 midnight	M_0.775	M_0.794	.908	.873	.803	.831
13	.774	.793	M.909	.874	.800	m_0.831
14	.772	.790	m_0.908	.873	.800	.839
15	m_0.771	m_0.790	.909	m_0.872	.798	.842
16	.775	.792	.913	.874	m_0.794	.840
17	.781	.800	.920	.879	.799	.839
18	.790	.809	.930	.885	.802	.845
19	.796	.816	.938	.894	.810	.853
20	M.799	.820	.942	.902	.817	.861
21	.797	M.820	M.946	M.904	.819	.869
22	.793	.820	.943	.901	M.820	M.874
23	.787	.813	.933	.894	.812	.863
Mean	29.770	29.792	29.907	29.874	29.801	29.840

DIURNAL AMPLITUDE OF VARIATION OF THE BAROMETER, OR DIFFERENCE BETWEEN THE PRINCIPAL MAXIMUM AND MINIMUM.

MONTH.	1866.	1867.	1868.	1869.	1870.	Mean.
	in.	*in.*	*in.*	*in.*	*in.*	*in.*
January	0.046	0.028	0.084	0.055	0.077	0.058
February	.093	.052	.026	.085	.085	.068
March	.074	.030	.041	.044	.075	.053
April	.077	.052	.085	.051	.056	.064
May	.054	.047	.045	.058	.075	.056
June	.086	.055	.071	.069	.071	.070
July	.051	.059	.061	.063	.070	.061
August	.048	.052	.076	.061	.068	.061
September	.080	.081	.073	.074	.075	.077
October	.063	.074	.033	.054	.076	.060
November	.038	.040	.042	.033	.057	.042
December	.070	.021	.051	.078	.066	.057
Mean	0.065	0.050	0.057	0.060	0.071	0.061

From an examination of these results, it appears that the diurnal amplitude of variation is greater in summer than in winter; the difference for the mean **of five years amounting to 0.09 inches.**

IATION OF THE BAROMETER FROM MEAN OF 1866, 1867, 68, 1869 AND 1870.

pril.	May.	June	July.	August.	Sept.	October.	Nov.	Dec.
+ 4	+ 0	+ 9	+ 9	+11	+ 7	+ 9	+ 7	+ 5
— 6	—10	— 2	— 2	+ 1	—12	— 7	—13	—10
—18	—18	—14	—11	—10	—22	—20	—21	—19
—28	—27	—23	—20	—21	—31	—27	—22	—21
—35	—30	—29	—28	—28	—37	—30	—19	—18
—33	—30	—33	—32	—31	—37	—27	—12	—17
—28	—27	—37	—30	—30	—34	—20	— 4	—13
—19	—18	—26	—25	—24	—25	—13	— 0	— 6
— 4	— 7	—18	—18	—14	—15	— 6	+ 4	— 5
+ 4	+ 5	— 5	— 6	— 4	— 7	— 1	+ 6	— 3
+ 7	+ 8	— 1	— 1	— 2	— 2	— 0	+ 6	— 3
+ 9	+ 9	+ 3	+ 3	+ 1	— 1	— 0	+ 4	— 3
+ 8	+ 8	+ 4	+ 5	+ 2	+ 1	— 1	+ 2	— 0
+ 5	+ 5	+ 3	+ 4	+ 1	+ 2	— 0	— 1	— 0
+ 0	+ 2	+ 1	+ 2	— 2	+ 1	— 1	— 1	— 1
+ 1	— 1	+ 0	+ 1	— 2	+ 2	— 2	— 3	+ 2
+ 1	+ 1	+ 5	+ 5	+ 0	+ 6	— 0	— 7	+ 0
+ 6	+ 8	+12	+11	+ 8	+13	+ 5	— 2	— 1
+16	+17	+20	+20	+17	+23	+11	+ 1	+ 5
+25	+21	+27	+26	+24	+31	+20	+ 9	+13
+25	+26	+32	+29	+28	+35	+28	+16	+21
+27	+22	+31	+27	+28	+39	+30	+18	+29
+23	+16	+27	+23	+28	+36	+27	+19	+34
+14	+11	+21	+17	+21	+26	+20	+11	+23

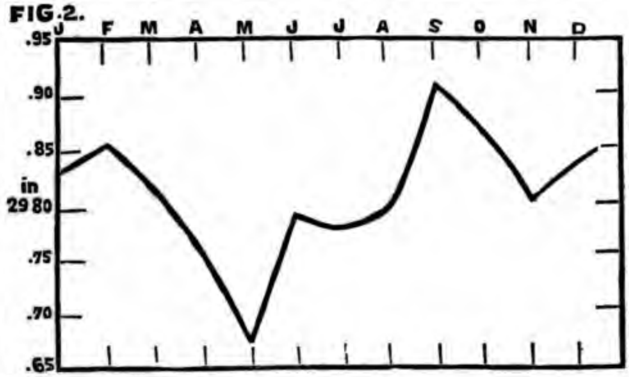
TYPO-BAROGRAPH.

DIURNAL VARIATION OF THE BAROMETER. MEAN OF 1866, 1867, 1868, 1869 AND 1870.

HOUR.	Spring.	Summer.	Autumn.	Winter.	Annual mean.
	in.	*in.*	*in.*	*in.*	*in.*
0 noon	+.004	+.010	+.008	+.005	+.007
1	—.008	—.001	—.011	—.013	—.008
2	—.019	—.012	—.021	—.023	—.019
3	—.028	—.021	—.027	—.027	—.026
4	—.031	—.028	—.028	—.025	—.028
5	—.029	—.032	—.025	—.022	—.027
6	—.024	—.032	—.019	—.016	—.023
7	—.016	—.025	—.013	—.007	—.015
8	—.004	—.017	—.006	—.003	—.007
9	+.004	—.005	—.001	—.001	—.001
10	+.007	—.001	+.001	—.001	+.001
11	+.008	+.002	+.001	—.001	+.003
12 midnight	+.007	+.004	+.001	—.004	+.002
13	+.005	+.003	+.000	—.006	+.000
14	+.001	+.000	—.000	—.001	+.000
15	—.001	—.000	—.001	+.001	—.000
16	+.000	+.003	—.000	—.000	+.001
17	+.006	+.010	+.005	+.002	+.006
18	+.015	+.019	+.012	+.008	+.013
19	+.022	+.026	+.020	+.015	+.021
20	+.024	+.030	+.026	+.023	+.026
21	+.024	+.029	+.029	+.030	+ 028
22	+.020	+.026	+.027	+.032	+.026
23	+.013	+.020	+.019	+ 025	+.019

MEAN MONTHLY PRESSURE FOR FIVE YEARS, FROM 1866 TO 1871.

FIG. 2.

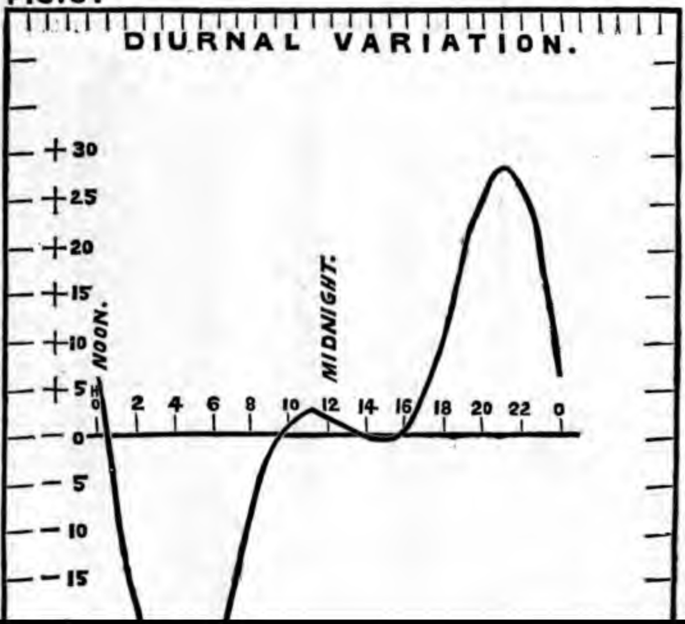


The diagram, Fig. 2, exhibits the mean monthly pressure for five years, the numerical results of which may be found on page 198. An examination of this diagram shows that the principal minimum occurs in May, and the principal maximum in September. The difference between the greatest and least mean monthly pressure amounts to $0^{in}.23$.

TYPO-BAROGRAPH.

DIURNAL VARIATION OF THE BAROMETER FROM THE MEAN OF FIVE YEARS.

FIG. 6.



TYPO-BAROGRAPH.

DARTMOUTH COLLEGE.

MEAN HOURLY RESULTS.

1869.

HOUR.	January.	February.	April.	September.	October.	November.	Mean.
	in.	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*
0....	29.313	29.262	29.231	29.542	29.318	29.276	29.324
1....	.293	.238	.229	.530	.304	.265	.310
2....	m.286	.223	m.223	.517	.295	m.257	.300
3....	.287	m.215	.223	.504	m.289	.262	m.297
4....	.291	.222	.224	.500	.289	.266	.299
5....	.295	.226	.226	m.498	.286	.277	.301
6....	.302	.241	.230	.499	.299	.288	.310
7....	.305	.254	.246	.505	.307	.296	.319
8....	.311	.262	.256	.513	.312	.299	.325
9....	.316	.270	.262	.519	M_0.317	.301	.331
10....	M_0.317	.273	.260	.527	.317	.300	.332
11....	.314	.274	.261	.532	.313	M_0.302	M_0.333
12....	.308	.276	M_0.262	.536	.312	.299	.332
13....	.306	.279	.258	M_0.539	.312	.291	.331
14....	.312	M_0.282	.253	.537	.309	.291	.331
15....	.315	.280	.254	m_0.536	m_0.305	.285	.329
16....	.309	m_0.280	m_0.251	.538	.307	m_0.280	m_0.328
17....	m_0.306	.284	.251	.550	.307	.281	.330
18....	.310	.287	.255	.560	.313	.285	.335
19....	.317	.293	M.257	.568	.323	.293	.342
20....	.328	M.299	.254	.574	.327	.300	.347
21....	.338	.296	.248	M.576	M.329	M.301	M.348
22....	M.338	.289	.244	.575	.324	.296	.344
23....	.330	.279	.237	.567	.315	.287	.336

DIURNAL MAXIMA AND MINIMA.

	Min.	Max₀.	Min₀.	Max.
Mean	3 P. M.	11 P. M.	4 A. M.	9 A. M.

Through the kindness of Prof. C. A. Young, we append the mean results, deduced from the records for six months, at Dartmouth College, Hanover, N. H., made by a printing barometer, precisely similar to our own.

The curve for diurnal variations is essentially the same as at Albany.

The amplitude of diurnal variation for those months which were complete is also essentially the same as for the corresponding months here.

TYPO-BAROGRAPH.

Chamber of Commerce, New York City.

Mean Hourly Results.

1867.

Hour.	February.	March.	April.	May.	June.
	in.	*in.*	*in.*	*in.*	*in.*
0 noon	30.241	30.198	29.950	29.746	30.167
1	.219	.181	.935	.739	.157
2	.198	.164	.924	.725	.150
3	.183	.160	.909	.712	.143
4	.178	.151	m.896	.708	.133
5	.179	m.149	.899	.706	m.130
6	m.174	.155	.908	m.705	.131
7	.177	.165	.915	.715	.139
8	.180	.174	.931	.727	.146
9	M_0.180	.183	.942	.740	.157
10	.178	.188	.946	.746	.162
11	.174	.186	.949	.748	M_0.162
12 midnight	.167	M_0.189	M_0.950	M_0.751	.161
13	.157	.184	.945	.749	.155
14	.155	.184	.936	.747	.149
15	.148	.175	.934	.746	.145
16	m_0.146	m_0.167	m_0.933	m_0.745	m_0.145
17	.156	.170	.937	.751	.153
18	.164	.178	.949	.759	.160
19	.169	.190	.960	.767	.167
20	.180	.202	.963	.771	.173
21	.195	.205	.964	.770	M.178
22	M.202	M.211	M.967	M.773	.176
23	.199	.211	.959	.769	.176

Through the kindness of Mr. George Wilson, Secretary of the Chamber of Commerce, we append the mean results, deduced from the records for nine months, at the Chamber of Commerce, New York city, made by a printing barometer, similar to our own.

The curve for diurnal variation is essentially the same as at Albany.

The amplitude of diurnal variation seems to be a little less than for the corresponding months at Albany.

TYPO-BAROGRAPH.

CHAMBER OF COMMERCE, NEW YORK CITY.

MEAN HOURLY RESULTS—NINE MONTHS.

1867.

Hour.	July.	August.	September.	October.	Mean.
	in.	*in.*	*in.*	*in.*	*in.*
0 noon	30.022	30.088	30.144	30.073	30.070
1	.019	.082	.140	.046	.058
2	.013	.076	.135	.054	.049
3	.006	.067	.131	.053	.040
4	.004	.065	.124	m.050	.034
5	m.003	.060	.119	.053	m.033
6	.003	m.057	.119	.055	.034
7	.008	.066	.119	.058	.040
8	.012	.068	m.116	.062	.046
9	.017	.078	.117	.068	.054
10	.019	.080	.121	.075	.057
11	M_0.020	M_0.082	M_0.121	M_0.076	M_0.057
12 midnight	.019	.080	.121	.075	.057
13	.015	.080	.119	.072	.053
14	.011	.076	.118	.071	.050
15	m_0.010	.072	.117	m_0.068	.046
16	.012	m_0.070	m_0.111	.069	m_0.044
17	.016	.072	.118	.071	.049
18	.021	.076	.121	.072	.055
19	.028	.080	.126	.079	.063
20	.031	.083	M.130	.085	.069
21	M.034	.083	.128	M.088	.072
22	.033	M.087	.128	.084	M.074
23	.036	.083	.127	.081	.071

DIURNAL MAXIMA AND MINIMA.

Month.	Min.	Max$_0$.	Min$_0$.	Max.
February	6 P. M.	9 P. M.	4 A. M.	10 A. M.
March	5 "	12 "	4 "	10 "
April	4 "	12 "	4 "	10 "
May	6 "	12 "	4 "	10 "
June	5 "	11 "	4 "	9 "
July	5 "	11 "	3 "	9 "
August	6 "	11 "	4 "	10 "
September	8 "	11 "	4 "	8 "
October	4 "	11 "	3 "	9 "
Mean for all	5 "	11 "	4 "	10 "

TYPO-BAROGRAPH.

MAXIMA AND MINIMA FOR DAYS.

1866.

MONTH.	Day.	Max.	Day.	Min.	Daily range.
		in.		*in.*	*in.*
January	7	30.788	31	29.427	1.361
February	26	30.493	1	29.430	1.063
March	13	30.188	16	29.492	0.696
April	17	30.299	23	28.913	1.386
May	7	29.944	27	29.173	0.771
June	30	29.985	18	29.472	0.513
July	1	30.056	22	29.549	0.507
August	16	29.959	9	29.572	0.387
September	23	30.134	12	29.561	0.573
October	5	30.345	30	29.494	0.851
November	5	30.380	16	29.277	1.103
December	20	30.472	27	29.009	1.463

Maximum day, January 7th; minimum day, April 23d.
Maximum daily range in December; minimum in August.
Extreme daily range, 1ⁱⁿ.875.

MAXIMA AND MINIMA IN EACH MONTH.

TYPO-BAROGRAPH.

Maxima and Minima for Days.

1867.

Month.	Day.	Max.	Day.	Min.	Daily range.
		in.		*in.*	*in.*
January	30	30.172	26	29.212	0.960
February	11	30.470	3	29.312	1.158
March	8	30.260	29	29.357	0.903
April	14	30.018	5	29.312	0.706
May	3	30.241	8	29.076	1.165
June	20	30.027	3	39.423	0.604
July	14	30.084	28	29.566	0.518
August	4	29.979	16	29.532	0.447
September	23	30.240	29	29.636	0.604
October	24	30.278	10	29.452	0.826
November	22	30.155	12	29.436	0.719
December	30	30.333	6	29.367	0.966

Maximum day, February 11th; minimum day May 8th.
Maximum daily range in February; minimum in August.
Extreme daily range, 1^{in}.394.

Maxima and Minima in each Month.

Month.	Day.	Hour.	Max.	Day.	Hour.	Min.	Hourly range.
			in.			*in.*	*in.*
January	30	9	30.241	26	3	29.142	1.099
February	10	22	30.696	3	1	29.122	1.574
March	6	0	30.356	1	20	29.163	1.193
April	13	22	30.203	22	4	29.125	1.078
May	3	20	30.294	8	4	28.986	1.308
June	10	23	30.084	3	3	29.310	0.774
July	13	19	30.210	28	11	29.512	0.698
August	30	22	30.057	17	3	29.465	0.592
September	23	20	30.293	29	6	29.472	0.821
October	23	23	30.348	2	4	29.392	0.956
November	6	20	30.227	2	1	29.256	0.971
December	19	9	30.418	6	11	29.175	1.243

Maximum hourly range in February; minimum in August.
Extreme hourly range, 1^{in}.710.

TYPO-BAROGRAPH.

MAXIMA AND MINIMA FOR DAYS.

1868.

MONTH.	Day.	Max.	Day.	Min.	Daily range.
		in.		in.	in.
January	31	30.339	1	29.233	1.106
February	23	30.552	28	29.397	1.155
March	5	30.368	21	29.374	0.994
April	13	30.161	7	29.225	0.936
May	11	30.066	21	29.443	0.623
June	4	30.113	19	29.495	0.618
July	2	29.939	31	29.600	0.339
August	27	30.091	1	29.458	0.633
September	18	30.229	6	29.737	0.492
October	30	30.380	5	29.527	0.853
November	16	30.204	30	29.348	0.856
December	26	30.268	7	28.994	1.274

Maximum day, February 23d; mimimum day, December 7th.
Maximum daily range in December; minimum in July.
Extreme daily range, $1^{in}.558$.

MAXIMA AND MINIMA IN EACH MONTH.

TYPO-BAROGRAPH.

Maxima and Minima for Days.

1869.

Month.	Day.	Max.	Day.	Min.	Daily range.
		in.		*in.*	*in.*
January	17	30.069	24	29.422	0.647
February	7	30.282	17	29.166	1.116
March	21	30.262	30	29.280	0.982
April	15	30.021	20	29.304	0.717
May	27	29.968	2	29.154	0.814
June	8	30.085	14	29.401	0.684
July	31	30.169	3	29.562	0.607
August	1	30.091	28	29.593	0.498
September	13	30.158	8	29.408	0.750
October	25	30.164	4	29.315	0.849
November	24	30.181	7	29.277	0.904
December	9	30.421	18	29.277	1.144

Maximum day, December 9th; minimum day, May 2d.
Maximum daily range in December; minimum in August.
Extreme daily range, $1^{in}.267$.

Maxima and Minima in each Month.

Month.	Day.	Hour.	Max.	Day.	Hour.	Min.	Hourly range.
			in.			*in.*	*in.*
January	31	23	30.202	24	11	29.332	0.870
February	7	12	30.317	23	2	28.820	1.497
March	21	21	30.436	30	3	29.200	1.236
April	22	21	30.126	20	17	29.174	0.952
May	27	20	30.023	2	14	29.122	0.901
June	8	22	30.194	13	16	29.372	0.822
July	31	20	30.232	11	1	29.498	0.734
August	1	0	30.202	28	11	29.530	0.672
September	28	20	30.226	8	6	29.250	0.976
October	25	9	30.216	4	5	29.146	1.070
November	24	21	30.280	19	21	29.013	1.267
December	8	23	30.476	18	11	29.081	1.395

Maximum hourly range in February; minimum in August.
Extreme hourly range, $1^{in}.656$.

TYPO-BAROGRAPH.

Maxima and Minima for Days.

1870.

Month.	Day.	Max.	Day.	Min.	Daily range.
		in.		*in.*	*in.*
January	14	30.325	2	29.010	1.315
February	4	30.308	8	29.242	1.066
March	25	30.280	16	29.204	1.076
April	15	30.053	19	29.451	0.602
May	18	29.997	6	29.330	0.667
June	22	29.939	30	29.505	0.434
July	30	29.879	7	29.501	0.378
August	26	30.074	29	29.601	0.473
September	21	30.159	3	29.516	0.643
October	23	30.339	20	29.383	0.956
November	6	30.078	14	29.456	0.622
December	10	30.130	5	29.415	0.715

Maximum day, October 23d; minimum day, January 2d.
Maximum daily range in January; minimum in July.
Extreme daily range, $1^{in}.329$.

Maxima and Minima in each Month.

THE TOTAL BAROMETRIC DISTURBANCE.

The total disturbance in the atmospheric pressure, as indicated by the barometer, we regard as an important element in meteorology. Hitherto the question has not been discussed by meteorologists, probably from the fact that ordinary barometric observations, even if in the form of continuous records, give but an approximate value for this quantity.

Before proceeding with the discussion of this element, we will explain more in detail what is meant by total barometric disturbance, as distinct from change of pressure.

Take as an illustration the record of the barometer for a single day. During this time the pressure may have increased five-tenths of an inch. Now, in case only two readings of the instrument were made, at the beginning and end of the period, we could say that the barometric fluctuation amounted to five-tenths of an inch. Had we secured, however, a continuous record, in the form of a curve, it would readily be seen that the total fluctuation amounted to more than the mere difference of pressure at the extremities of the line; for the pressure may have increased and diminished a hundred times during the period. By drawing a zero line, and measuring a great number of ordinates to the curve, an approximate value of the amount of fluctuation could be ascertained.

The atmosphere is never entirely at rest; the pressure is continually changing. The more delicate our instrument of measurement, the more apparent are these changes. If we examine the record given by a delicate registering barometer, the curve is never found to be absolutely a straight line; pulsations or waves of pressure continually follow each other, in the same manner as the waves on the surface of a large body of water; only in the case of the atmosphere, being of much less density than water, the waves are presumed to be relatively of much greater magnitude.

When we speak, then, of "total barometric disturbance," we mean the whole number of pulsations or waves in any given time, viz., one hour, one day, or one year.

If the continuous records of the barometer, given in the form of a curve, are examined for a considerable period of time, there will be found in one year, about 250 waves exceeding the one-tenth of an inch, 150 exceeding two-tenths of an inch, 100 exceeding five-tenths of an inch, and only 7 exceeding one inch. It may therefore readily be imagined that the number of waves or pulsations will be inversely as their magnitude. In order, therefore, to arrive at comparative results, it is necessary to assume some unit of measure for the pulsations. For our original mechanism, previously described, and used from 1865 to 1869, the unit of measure was one-thousandth of an inch. For all the other machines, the unit was the two one-thousandths.

These machines count the total number of pulsations made in one day, or in other words, give a relative measure of the amount of barometric disturbance.

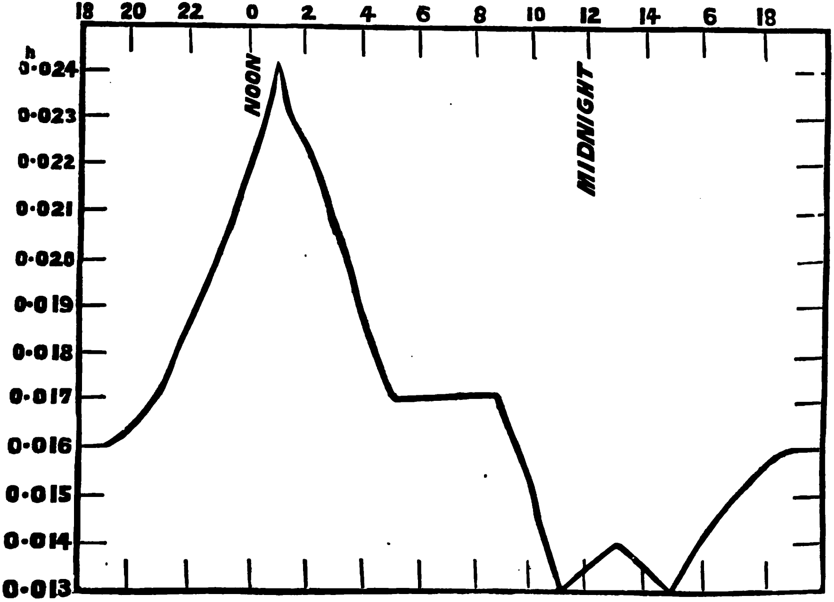
Previous to January 1st, 1870, an additional drum was connected with the printing barometer at the Dudley Observatory, for registering the number of pulsations for each separate hour.

The numerical results for each hour for the year 1870, as well as the mean daily disturbance for five consecutive years, will be found in the following pages.

1st. The diurnal inequality in the barometric disturbance. An examination of the final results, shown by the curve, Fig. 4, indicates a very marked maximum and minimum in the amount of disturbance for separate hours.

MEAN HOURLY BAROMETRIC DISTURBANCE, 1870.

G 4.



The maximum occurs at 1 P. M., and the minimum about midnight. The mean hourly disturbance at 1 P. M. is $0^{in}.025$, ,and at midnight $0^{in}.013$, or nearly twice as great. This law of variation in the barometric disturbance is well marked in each separate month. The amplitude of variation is also twice as great in winter as in summer.

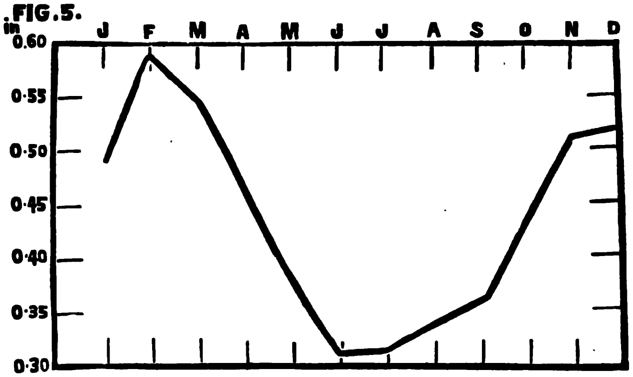
If the curve, Fig. 4, is compared with the curve, Fig. 3, representing the mean hourly velocity of the wind, almost a perfect coincidence will be noticed, not only as to the rate of variation, but in the time of maxima and minima, showing the intimate relation existing between the velocity of the wind and the variation of the pressure.

2d. The total barometric disturbance for separate months.

As might have been expected, the amount of disturbance varies from month to month, in a very uniform manner, each separate year giving a well marked maximum and minimum.

MEAN MONTHLY BAROMETRIC DISTURBANCE FOR FIVE YEARS, FROM 1866 TO 1871.

FIG. 5.



The mean daily disturbance, for the mean of five years, is shown by the curve, Fig. 5, from which it appears that the maximum occurs in February, and the minimum in July. The absolute maximum and minimum for each year was as follows:

	Maximum.	Minimum.
1866	March.	June.
1867	February.	August.
1868	February.	May.
1869	April.	September.
1870	January.	June.

The mean daily disturbance, for the whole five years, is $0^{in}.44$; for one day of summer it is $0^{in}.32$, and for one day of winter it is $0^{in}.53$.

The total disturbance for each year is as follows.

1866	149 inches.
1867	159 inches.
1868	137 inches.
1869	194 inches.
1870	166 inches.

These numbers show the total distance traveled by the surface of the mercury in the barometer tube during the year. The amount of this motion is equivalent to the removal of the whole body of the atmosphere more than five times annually.

Some years since, we pointed out the intimate relation existing between the barometric disturbance and the weather. We remarked that this element of disturbance was a better guide in prognosticating storms, than the mere change of barometric height. An examination of the mean daily and mean monthly curves for barometric disturbance, shows that this opinion is founded in nature.

It will also be seen, by an inspection of the tables exhibiting the mean daily disturbance, that storms are invariably accompanied with excessive barometric fluctuation. In fact, a pretty correct history of the weather may be determined by an examination of this element alone; and when taken in connection with changes of pressure, it indicates in a very marked manner the atmospheric phenomena.

Some hours previous to the arrival of a great storm, the "barometric disturbance" increases, amounting in some cases to seven times the change of pressure in a given interval of time. It is our opinion that the waves of pressure are propagated in the upper regions of the atmosphere, some hours before the storm reaches any given locality at the surface of the earth.

TYPO-BAROGRAPH.

Barometric Disturbance.

1866.

Date.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
	in.	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*
1	0.67	0.56	0.20	0.42	0.44	0.22	0.20	0.16	0.43	0.30	0.42	0.48
2	0.42	0.37	0.24	0.30	0.30	0.20	0.20	0.34	0.41	0.38	0.59	0.24
3 ...	0.33	0.30	0.29	0.22	0.16	0.16	0.17	0.36	0 25	0.41	0.30	0.85
4	0.76	0.70	0.38	0.31	0.20	0.23	0.30	0.42	0.20	0.50	0.28	0.90
5	0.69	0.40	0.37	0.35	0.16	0.23	0.10	0.24	0.34	0.20	0.28	0.29
6	0.52	0.45	0.53	0.55	0.37	0 48	0.12	0.16	0.26	0.30	0.40	0.36
7 . .	0.35	0.50	0.40	0.38	0.28	0.20	0.06	0.32	0.50	0.24	0.20	0.58
8 ...	0.32	0.43	0.30	0.34	0.53	0.40	0.06	0.23	0.40	0.34	0.17	0.89
9	0.49	0.24	0.59	0.28	0.29	0.30	0.29	0.28	0.73	0.20	0.31	0.32
10	0.84	0.43	0.90	0.28	0.12	0.11	0.14	0.23	0.46	0.17	0.40	0.36
11	0.36	0.48	0.88	0.22	0.18	0.22	0.37	0.17	0.43	0.13	0.53	0.20
12	0.77	0 50	0.61	0.56	0.53	0.22	0.88	0.24	0.40	0.18	0.38	0.28
13	0.78	0.38	0.44	0.50	0.60	0.22	0.95	0.14	0.68	0.25	0.40	0.30
14	0.80	0.94	0.78	0.82	0.23	0.24	0.30	0.16	0.30	0.32	0.50	0.28
15	1.20	0.89	0.72	0.29	0.35	0.26	0.29	0.42	0.30	0.19	1.03	0.40
16	0.61	0.19	1.10	0.38	0.23	0.24	0.19	0.26	0.70	0 29	0.73	0.36
17	1.03	0 30	0.78	0.29	0.14	0.46	0.36	0.55	0.38	0.31	0.35	0.66
18 ..	0 50	0 80	0.54	0.36	0.10	0.27	0.58	0.32	0.66	0.20	0.43	0.30
19	0.50	0.73	0.83	0.25	0.28	0.31	0.28	0.28	0.52	0.19	0.64	0.70
20	0.60	0.60	1.57	0.44	0.26	0.13	0.20	0.48	0.43	0.35	0.60	0.12
21	0.30	0.34	0.82	0.22	0.37	0.18	0.30	0.68	1.25	0.41	0.64	0.41
22	0.36	0.29	0.55	0.55	0.25	0.23	0.28	0.36	0.58	0.22	0.29	0.60
23	0.29	0.56	0.53	0.31	0.23	0.19	0.82	0.26	0.40	0.24	0.34	0.54
24	0.80	0.77	0 50	0.38	0.23	0.07	0.20	0.28	0.46	0.41	0.30	0.40
25	0 61	0.78	0.46	0.52	0.13	0.30	0.68	0.30	0.73	0.29	0.24	0.43
26	0.79	0.32	0.36	0.31	0.25	0.31	0 26	0.23	0.60	0.29	0.19	0.61
27	0.16	0.18	0.40	0.38	0.53	0.66	0.26	0.16	0.42	0 30	0.29	2.10
28	0.19	0.16	0.50	0.40	0.48	0.17	0.20	0.13	0.18	0.40	0.53	1.45
29	0.31	....	0.50	0.50	0.23	0.08	0.17	0.16	0.30	0.53	0.76	0.30
30	0.48	....	0.52	0.62	0 42	0.26	0.36	0.16	0.29	0.49	0.48	0.32
31	0.64	....	0.45	....	0.36	....	0.18	0.16	....	0.44	....	0.20

Mean Daily Barometric Disturbance for each Month.

	1866.	1867.	1868.	1869.	1870.	Mean.
	in.	*in.*	*in.*	*in.*	*in.*	*in.*
January	0.56	0.37	0.36	0.38	0.71	0.48
February	0.48	0.64	0.59	0.54	0.69	0.59
March	0.58	0.47	0.48	0.66	0.56	0.55
April	0.39	0.46	0.45	0.72	0.34	0.47
May	0.30	0.49	0.22	0.61	0.28	0.38
June	0.25	0.31	0.29	0.52	0.21	0.32
July	0.31	0.29	0.24	0.45	0.29	0.32
August	0.28	0.27	0.35	0.55	0.26	0.34
September	0.47	0.34	0.37	0.38	0.25	0.36
October	0.30	0.40	0.54	0.45	0.52	0.44
November	0.43	0.56	0.29	0.62	0.68	0.52
December	0.52	0.63	0.35	0.49	0.63	0.52
Mean	0.41	0.44	0.38	0.53	0.45	0.44

The maximum disturbance occurs in February.
The minimum disturbance occurs in July.

TYPO-BAROGRAPH.

Barometric Disturbance.

1867.

Date.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
	in.	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*
1 ...	0.20	0.55	1.00	0.23	1.66	0.30	0.36	0.26	0.40	0.29	0.65	0.60
2....	0.19	0.74	1.26	0.62	0.64	0.40	0.25	0.36	0.14	0.44	1.18	0.21
3....	0.28	0.60	0.61	0.43	0.20	0.37	0.15	0.24	0.37	0.52	1.26	0.65
4....	0.31	0.38	0.52	0.59	0.68	0.68	0.23	0.16	0.19	0.52	0.26	0.29
5....	0.50	0 54	0.29	0.56	0.30	0.22	0 17	0.13	0.29	0.40	0.25	0.77
6....	0.22	0.46	0.54	0.55	0.67	0.12	0.40	0.14	0.60	0.40	0.25	3.62
7....	0.28	0.23	0.52	0.60	1.00	0.36	0.28	0.14	0.60	0.25	0.37	0.43
8....	0.30	0.72	0.20	0.50	0.66	0.24	0.06	0.17	0.34	0.37	0.37	0.53
9....	0.18	2.02	0.50	0.26	0.37	0.23	0.34	0.22	0 36	0.40	0.22	0.56
10....	0.29	1.44	0.54	0.60	0.30	0.24	0.20	0.18	0.30	0.89	0.72	0.49
11 ...	0.42	0.53	0.64	0.36	0.58	0.26	0,22	0.22	0.18	0.34	0.64	0.50
12....	0.56	0.29	0.24	0.28	0.30	0.13	0.43	0.30	0.32	0.26	0.68	0.98
13....	0.60	0.66	0.90	0.45	0.66	0.30	0.30	0.31	0.62	0.29	0.78	0.29
14....	0.11	0.38	0.62	0.36	0.29	0.36	0.18	0.19	0.38	0.30	0.97	0.36
15 ...	0.38	0.41	0.32	0 29	0.40	0.12	0.19	0.24	0.19	0.55	0.55	0.32
16....	0.64	0.63	0.64	0.37	0.43	0.38	0.49	0.26	0.22	0.60	0.40	0.32
17....	0.41	1.09	0.92	0.46	0·30	0.24	0.19	0.30	0.30	0.61	0.37	0.28
18....	0.32	0.91	0.56	0.48	0.36	0.58	0.12	1.02	0.34	0.38	0.30	0.52
19 ...	0.50	0.58	0.29	0.44	0.24	0.18	0.13	0.30	0.14	0.30	0.29	0.50
20....	0.82	0.50	0.13	0.48	0.16	0.20	0.25	0.30	0.43	0.18	0.58	0.43
21....	0.29	0.38	0.31	0.85	0.52	0.30	0.07	0.24	0.16	0.50	0.29	0.72
22....	0.23	0.56	0.24	1.00	0.44	0.14	0.18	0.17	0.55	0.60	0.35	0.50
23....	0.37	1.32	0.25	0.38	0.48	0.20	0.10	0.20	0.24	0.40	0.35	0.60
24....	0.24	0.47	0.36	0.28	0.29	0.19	0.19	0.36	0.54	0.22	0.35	0.88
25....	0.72	0.25	0.24	0.20	1.59	0.38	0.29	0.23	0.32	0.19	0.67	0.88
26 ...	0.26	0.28	0.52	0.41	0.47	0.22	0.29	0.20	0.20	0.19	0.41	0.73
27....	0.42	0.60	0.23	0.84	0.21	0.31	0.19	0.34	0.20	0.18	0.35	0.77
28....	0.14	0.30	0.25	0.17	0.36	0.85	0.31	0.29	0.40	0.41	0.46	0.29
29....	0.49	....	0.13	0.25	0.14	0.40	1.49	0.31	0.62	0.48	1.09	0.36
30....	0.29	....	0.17	0.58	0.20	0.36	0.90	0.40	0.22	0.25	1.45	0.36
31....	0.60	....	0.52	....	0.36	....	0.18	0.26	....	0.72	....	0.78

Mean Daily Barometric Disturbance for the Four Seasons.

	1866.	1867.	1868.	1869.	1870.	Mean.
	in.	*in.*	*in.*	*in.*	*in.*	*in.*
Spring	0.42	0 47	0.38	0.66	0.39	0.46
Summer......................................	0.28	0.29	0.29	0.51	0.25	0.32
Autumn......................................	0.40	0.43	0.40	0.48	0.48	0.44
Winter	0.52	0.55	0.43	0.47	0.68	0.53

[illegible]

[illegible]

Nov.	Dec.
In.	In.
..	0.35
....	....
....	....
....	0.25
....	...
....	....
...	0.60
...	0.60
....	0.13
..	0.10
...	0.25
....	0.32
....	...
..	....
...	0.36
....	...
...	0.40
0.18	0.72
0.10	...
0.12	0.35
0.10	...
0.31	0.22
0.18	.
0.27	....
0.43	....
0.71	....
0.70	....
0.19	....
0.25	..
0.25	....
....	....

TYPO-BAROGRAPH.

BAROMETRIC DISTURBANCE.

1869.

DATE.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
	in.	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*
1....	....	1.62	....	1.35	....	0.81	1.26	...	0.54	0.81	. .	0.36
2....	....	....	....	....	3.06	....	....	1.17	....	....	....	....
3....	0.34	1.17	....	0.63	....	0.90	1.26	....	0.36	2.86	....	0.90
4....	0.44	0.53	1.71	....	1.17	...	....	2.34	....	....	....	....
5....	0.46	0.44	....	0.90	....	1.17	0.54	...	0.45	0.72	0.60	1.26
6....	....	...	0.36	....	2.79	....	..	1.17	....	....	....	....
7 ...	0.16	1.08	...	1.17	...	1.17	1.35	....	1.08	0.36	2.60	0.81
8....	0.59	0.16	0.99	....	0.63	....	....	2.70	...	....	....	....
9....	0.42	0.28	....	0.76	....	1.80	1.08	....	0.45	0.72	1.98	0.54
10 ..	0.60	0.05	1.17	....	0.63	....	....	0.90	....	....	....	....
11....	....	0.38	....	0.45	....	0.63	1.00	....	0.45	0.63	2.07	0.81
12....	....	0.23	0.90	....	0.90	....	....	0.54	...	....	....	....
13....	0.44	0.49	....	0.54	...	0.63	0.72	....	0.45	0.63	0.45	0.72
14....	0.30	0.67	....	....	0.63	...	....	0.99	....	....	....	....
15....	0.32	0.11	....	1.08	....	1.08	0.99	....	1.08	0.54	0.54	0.81
16....	0.26	0.28	1.08	...	0.54	....	....	0.54	....	....	....	....
17...	0.18	0.43	0.81	0.90	....	1.26	0.45	....	0.81	0.63	1.44	1.08
18....	0.20	0.34	....	....	0.72	....	...	0.63	....	....	....	....
19....	0.29	0.48	1.80	2.34	....	0.90	0.72	....	0.63	0.27	1.89	2.07
20....	0.43	0.37	....	....	1.62	...	....	0.45	....	....	....	....
21....	0.52	0.53	2.34	2.16	. ..	0.99	0.90	....	0.81	0.81	1.17	1.26
22....	0.47	0.94	....	1.80	0.99	....	....	1.26	....	....	....	....
23....	....	0.85	1.17	....	...	0.63	0.63	....	0.45	0.72	0.72	1.71
24....	0.54	....	....	1.80	0.72	....	....	1.26	...	....	....	....
25....	0.30	2.16	1.26	....		1.26	0.54	....	2.43	0.63	0.81	0.63
26....	0.29	....	....	1.53	1.08	....	. .	0.72	....	....	....	....
27 ..	0.53	1.08	0.90	....	....	1.62	0.72	....	0.81	0.63	0.72	0.99
28....	0.28	0.90	....	2.97	1.08	..	....	0.63	....	....	....	....
29 ...	0.52	....	1.17	...	...	0.90	0.90	....	0.54	2.70	1.08	0.72
30....	0.56	....	....	2.07	1.89	....	....	0.90	....	....	0.72	....
31....	0.55	....	1.44	...	....	....	1.26	....	....	...	....	0.63

TOTAL BAROMETRIC DISTURBANCE FOR THE FOUR SEASONS, REDUCED TO 91¼ DAYS EACH.

	1866.	1867.	1868.	1869.	1870.	Mean.
	in.	*in.*	*in.*	*in.*	*in.*	*in.*
Spring	38.68	43.24	34.84	60.68	36.14	42.72
Summer...........................	25 68	26.62	26.70	46.20	23.48	29.74
Autumn...........................	26.56	39.55	36 46	44.22	44.31	40.22
Winter :	47.94	49.68	39.88	43 34	61.94	48.46
Sum.............	148.86	159.09	137.38	194.44	165.87	

TYPO-BAROGRAPH.

BAROMETRIC DISTURBANCE.

1870.

DATE.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
	in.	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*
1....	....	1.35	0.81	0.54	0.81	....	0.27	....	....	....	0.09	0.45
2....	2.97	....	....	....	....	0.36	....	0.36	0.36	0.72	....	0.54
3....	...	1.08	1.35	0.72	0.72	0.09	0.27	...	....	....	0.99	. ..
4....	0.90	....	0.36	0.81	....	....	....	0.45	0.54	0.81	0.45	0.81
5....	...	0.72	...	0.18	0.99	0.36	0.45	0.18	....	....	....	0.54
6....	1.35	....	0.63	....	0.36	....	....	....	0.54	0.63	0.90	....
7....	...	0.81	....	0.36	....	0.36	0.63	0.36	....	....	0.45	1.17
8....	1.44	....	0.45	0.18	0.45	....	0.36	....	0.45	0.54	....	....
9....	....	1.35	....	....	....	0.36	....	0.63	0.36	....	2.52	0.81
10....	1.17	....	1.17	0.54	0.36	0.09	0.54	....	...	0.45	....	....
11....	....	1.44	...	...	....	....	..	0.36	0.63	....	2.07	1 08
12 ...	1.35	....	1.17	0.99	0.45	0.27	0.45	0.18	0.27	0 54	....	....
13...	....	1.80	...	....	0.18	....	....	....	...	....	1.08	0.72
14....	1.89	....	1.08	0.54	...	0.54	0.63	0.36	0.45	0.63	....	...
15....	....	1.53	....	0.36	0.45	....	0.18	0.18	....	....	0.90	3.42
16....	2.07	...	3.69	...	....	0.27	....	...	0.36	0.54	....	....
17....	....	1.35	....	0.81	0.54	0.09	1.35	0.54	....	....	0.63	1.53
18 ...	1.71	...	0.99	....	....	....	....	...	0.72	1.80	0.54	....
19. ..	....	2.43	...	0.63	0.63	0.45	0.45	0.45	. ..	....	1.44	1.34
20....	0.99	....	0.63	...	0.27	....	....	....	0.45	1.98	....	....
21....	....	1.89	...	0.45	....	0.72	0.81	1.35	....	0.36	1.35	1.17
22....	1.30	....	0.81	0.27	0.63	....	0.27	....	0.45	....	....	....
23 ..	....	0.45	....	....	....	0.54	....	0.36	0.27	0.72	2.52	1.44
24....	1.44	...	2.07	0.99	0.54	0.18	0.63	....	....	0.45	....	....
25 ...	....	1.35	0.18	....	....	....	....	0.81	0.45	....	1.35	1.08
26....	1.26	....	....	0.54	0.36	0.45	0.63	0.36	0.18	1.17	....	....
27....	....	1.71	1.53	....	0.18	....	....	....	....	....	2.16	0.99
28....	0.72	....	....	0.81	....	0.54	0.36	0.45	0.45	3.06	....	....
29...	...	....	0.72	0.27	0.36	....	0.36	0.45	....	....	0.72	1.17
30....	0.90	....	...	....	....	0.72	....	....	0.72	1.17	0.26	....
31....	....	....	0.27	. .	0.45	....	0.45	0.36	....	0.45	....	1.44

TOTAL BAROMETIC DISTURBANCE REDUCED TO "TWO" SEASONS.

	MEAN DISTURBANCE FOR ONE DAY.		TOTAL DISTURBANCE.	
	Summer.	Winter.	Summer.	Winter.
	in.	*in.*	*in.*	*in.*
1866	0.34	0.46	62.24	86.62
1867	0.36	0.51	66.17	92.92
1868	0.35	0.41	63.16	74.22
1869	0.50	0.57	90.42	104.02
1870	0.37	0.53	67.79	98.08

TYPO-BAROGRAPH.

HOURLY BAROMETRIC DISTURBANCE FOR JANUARY, 1870.

DATE.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-0
	in.	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*
1.	.010	.014	.038	.006	.010	.020	.031	.021	.014	.006	.025	.017	.027	.030	.042	.042	.042	.025	.067	.048	.055	.052	.069	.091
2.	.115	.132	.143	.175	.063	.048	.055	.041	.052	.101	.150	.118	.098	.178	.148	.090	.044	.040	.036	.040	.042	.054	.054	.054
3.	.055	.010	.010	.005	.019	.026	.020	.011	.009	.012	.004	.005	.016	.011	.010	.002	.000	.005	.005	.015	.024	.004	.006	.018
4.	.008	.000	.017	.005	.004	.026	.008	.006	.005	.009	.002	.005	.017	.026	.015	.019	.016	.038	.031	.037	.040	.050	.008	.079
5.	.091	.026	.038	.026	.026	.018	.021	.021	.010	.021	.013	.037	.025	.052	.052	.020	.020	.038	.030	.023	.036	.033	.040	.040
6.	.018	.022	.010	.012	.016	.016	.012	.011	.018	.015	.000	.017	.020	.030	.048	.022	.063	.030	.050	.018	.080	.050	.022	.041
7.	.005	.010	.040	.050	.050	.010	.010	.000	.050	.009	.010	.013	.004	.004	.018	.020	.018	.012	.010	.013	.017	.010	.019	.034
8.	.020	.010	.013	.009	.020	.019	.013	.006	.008	.012	.000	.005	.007	.035	.032	.048	.178	.078	.059	.059	.062	.043	.064	.041
9.	.028	.008	.005	.000	.015	.015	.008	.010	.025	.039	.011	.024	.005	.000	.028	.028	.012	.005	.003	.000	.003	.010	.030	.040
10.	.040	.033	.019	.014	.008	.000	.010	.014	.018	.015	.000	.013	.011	.075	.070	.076	.071	.075	.072	.077	.099	.030	.018	.038
11.	.028	.026	.021	.020	.014	.015	.018	.059	.025	.018	031	.026	.051	.030	.035	.011	.024	.015	.026	.021	.031	.052	.040	048
12.	.050	.025	.010	.022	.048	.031	.032	.050	.018	.005	.046	.002	.002	.020	.030	.014	.021	.049	.026	.020	.030	.026	.050	.039
13.	.025	.090	.203	.045	.102	.125	.076	.049	.022	.083	.021	.046	.056	.042	.056	.014	.027	.027	.012	.019	.026	.016	.000	.010
14.	.040	.015	.023	.019	.005	.017	.020	.008	.018	.015	.023	.037	.027	.033	.039	.025	.019	.020	.015	.028	.015	.026	.050	.069
15.	.049	.046	.075	.034	.058	.070	.043	.055	.007	.031	.025	.036	.020	.051	.046	.026	.035	.045	.058	.075	.089	.090	.030	.026
16.	.059	.059	.041	.023	.010	.040	.018	.056	.035	.020	.020	.005	.027	.016	.023	.051	.040	.015	.008	.030	.027	.043	.051	.052
17.	.089	.051	.023	.029	.031	.020	.031	.070	.029	.138	.108	.030	.095	.087	.085	.092	.053	.028	.040	.049	.040	.022	.020	.021
18.	.013	.010	.014	.006	.000	.015	.019	.015	.007	.010	.018	.015	.031	.018	.022	.006	.000	.004	.006	.017	.017	.011	.014	.030
19.	.046	.015	.000	.020	.015	.015	.000	.023	.025	.031	.013	.018	.002	.002	.002	.005	.005	.018	.004	.002	.005	.015	.030	.048
20.	.048	.036	.028	.023	.013	.020	.012	.015	.019	.032	.015	.011	.015	.007	.016	.010	.004	.011	.026	.038	.041	.060	.035	.020
21.	.002	.010	.011	.010	.010	.007	.024	.013	.022	.015	.030	.013	.011	.027	.023	.015	.020	.015	.013	.015	.011	.015	.023	.037
22.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
23.	.018	.015	.005	.023	.043	.028	.039	.034	.022	.035	.029	.018	.004	.027	.018	.018	.016	.022	.011	.015	.015	.049	.005	.020
24.	.029	.020	.014	.005	.005	.007	.007	.019	.015	.012	.012	.039	.060	.040	.030	.080	.052	.043	.062	.025	.060	.040	.026	.046
25.	.079	.044	.054	.063	.070	.022	.047	.040	.034	.035	.004	.010	.035	.026	.015	.039	.015	.030	.028	.025	.022	.042	.013	.010
26.	.007	.007	.010	.016	.010	.013	.021	.033	.012	.008	.000	.023	.015	.006	.004	.034	.005	.018	.023	.025	.033	.035	.018	.012
27.	.000	.005	.004	.018	.005	.010	.018	.000	.014	.019	.007	.002	.000	.010	.021	.004	.006	.008	.019	.008	.014	.014	.000	.019
28.	.025	.011	.008	.002	.002	.002	.005	.012	.012	.000	.008	.013	.025	.013	.026	.006	.031	.018	.032	.020	.020	.038	.040	.050
29.	.066	.053	.021	.040	.015	.039	.014	.025	.013	.020	.010	.002	.002	.020	.030	.028	.033	.057	.051	.030	.015	.020	.012	.010
30.	.008	.004	.018	.015	.017	.015	.004	.007	.007	.003	.000	.000	.020	.006	.002	.006	.000	.008	.000	.007	.008	.013	.013	.040
31.	.024	.028	.004	.020	.024	.000	.020	.023	.031	.005	.012	.045	.020	.032	.009	.010	.010	.005	.004	.013	.010	.028	.023	.013

TYPO-BAROGRAPH.

HOURLY BAROMETRIC DISTURBANCE FOR FEBRUARY, 1870.

DATE.	0-1	1-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-0
	in.	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*
1.	.117	.170	.048	.055	.053	.112	.047	.029	.008	.025	.015	.004	.015	.012	.014	.008	.005	.033	.025	.021	.007	.018	.014	.050
2.	.050	.048	.024	.000	.030	.000	.015	.018	.003	.027	.037	.008	.007	.023	.003	.003	.005	.045	.040	.030	.025	.026	.028	.005
3.	.010	.013	.022	.010	.023	.018	.028	.036	.023	.026	.032	.014	.010	.035	.009	.020	.010	.009	.009	.032	.015	.008	.015	.023
4.	.029	.030	.000	.010	.023	.026	.010	.016	.030	.010	.014	.005	.013	.016	.022	.015	.002	.005	.008	.000	.015	.018	.056	.031
5.	.043	.020	.026	.018	.037	.018	.010	.010	.015	.017	.006	.000	.015	.008	.014	.003	.010	.000	.010	.003	.005	.012	.000	.012
6.	.021	.009	.000	.000	.004	.003	.008	.005	.013	.005	.000	.000	.003	.006	.013	.000	.018	.010	.017	.008	.008	.010	.021	.003
7.	.026	.018	.023	.012	.012	.007	.010	.021	.016	.012	.026	.037	.031	.013	.033	.030	.035	.044	.026	.045	.038	.081	.090	.118
8.	.118	.085	.081	.058	.032	.060	.031	.030	.011	.000	.002	.005	.018	.007	.007	.007	.013	.018	.040	.015	.016	.003	.006	.025
9.	.048	.035	.050	.052	.026	.040	.032	.017	.020	.000	.010	.012	.007	.013	.000	.010	.020	.014	.014	.025	.000	.006	.008	.028
10.	.015	.008	.011	.016	.025	.027	.022	.035	.023	.012	.021	.060	.026	.037	.031	.022	.009	.020	.018	.023	.017	.010	.015	012
11.	.028	.027	.027	.035	.034	.025	.050	.038	.025	.040	.041	.017	.036	.051	.062	.053	.039	.032	.020	.018	.035	.050	.020	.031
12.	.028	.053	.052	.068	.102	.076	.053	.028	.035	.038	.030	.026	.072	.092	.040	.030	.035	.035	.035	.050	.060	.072	.050	.070
13.	.051	.005	.012	.010	.023	.038	.028	.030	.026	.013	.010	.011	.038	.015	.020	.022	.024	.025	.021	.048	.045	.043	.052	.048
14.	.110	.058	.068	.015	.037	.020	.027	.016	.026	.013	.013	.012	.016	.010	.030	.036	.033	.033	.017	.040	.031	.033	.022	.015
15.	.020	.007	.016	.050	.028	.032	.019	.021	.005	.018	.000	.014	.012	.029	.020	.045	.043	.038	.040	.048	.028	.037	.020	.010
16.	.016	.025	.013	.024	.026	.023	.034	.011	.038	.010	.012	.018	.027	.010	.002	.011	.013	.006	.005	.012	.015	.031	.020	.041
17.	.045	.058	.038	.021	.014	.016	.000	.037	.028	.036	.040	.043	.045	.027	.033	.036	.018	.038	.040	.045	.048	.084	.045	.061
18.	.068	.085	.050	.032	.010	058	.048	.160	.092	.130	.148	.172	.068	.067	.130	.095	.085	.083	.090	.060	.069	.037	.024	.024
19	.020	.022	.020	.026	.035	.038	.028	.023	.030	.015	.014	.007	.002	.023	.043	.004	.010	.005	.013	.017	.008	.015	.013	.035
20.	.030	.045	.028	.022	.030	.040	.030	.050	.048	.042	.070	.108	.094	.064	.043	.025	.018	.010	.012	.020	.025	.093	.118	.125
21.	.085	.062	.162	.103	.050	.013	.010	.012	.019	.010	.003	.002	.006	.000	.005	.000	.005	.000	.000	.000	.000	.020	.018	.014
22.	.014	.010	.012	.002	.005	.010	.010	.000	.000	.000	.000	.000	.003	.003	.007	.003	.002	.004	.010	.012	.010	.018	.016	.030
23.	.030	.030	.029	.020	.003	.003	.005	.007	.000	.010	.000	.005	.003	.008	.007	.007	.006	.003	.010	.018	.012	.008	.016	.011
24.	.040	.050	.067	.123	.100	.029	.052	.015	.038	.042	.009	.006	.009	.011	.012	.009	.010	.028	.014	.034	.026	.018	.034	.034
25.	.039	.031	.031	.020	.010	.000	.000	.008	.009	.000	.000	.007	.010	.020	.008	.003	.044	.039	.020	.044	.075	.133	.054	.010
26.	.030	.050	.325	.065	.055	.039	.030	.036	.029	.023	.000	.010	.004	.004	.002	.004	.018	.000	.020	.020	.016	.050	.025	.025
27.	.047	.038	.032	.029	.020	.005	.017	.020	.003	.002	.008	.013	.010	.000	.005	.005	.000	.000	.000	.002	.010	.005	.007	.037
28.	.002	.003	.002	.000	.000	.005	.002	.005	.002	.008	.000	.008	.008	.021	.015	.021	.022	.019	.050	.012	.054	.026	.018	.008

TYPO-BAROGRAPH.

HOURLY BAROMETRIC DISTURBANCE FOR MARCH, 1870.

DATE.	0–1	1–2	2–3	3–4	4–5	5–6	6–7	7–8	8–9	9–10	10–11	11–12	12–13	13–14	14–15	15–16	16–17	17–18	18–19	19–20	20–21	21–22	22–23	23–0
	in.	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*
1.	.049	.020	.026	.005	.016	.009	.010	.013	.010	.000	.000	.002	.005	.000	.005	.005	.008	.012	.011	.018	.032	.009	.010	.026
2.	.082	.066	.176	.065	.108	.059	.035	.021	.029	.005	.000	.006	.006	.020	.002	.020	.018	.029	.023	.029	.068	.007	.065	.060
3.	....	....	....	....	....	...	....	....	....	....	....	..	....	....	....	....	....	...	....	....	....	....	....	....
4.	.011	.034	.018	.015	.005	.005	.012	.005	.007	.002	.005	.000	.000	.004	.002	.006	.021	.013	.017	.020	.025	.023	.003	.000
5.	.009	.020	.002	.013	.005	.014	.020	.010	.000	.007	.020	.014	.008	.018	.002	.016	.007	.010	.011	.012	.005	.010	.005	.020
6.	.030	.025	.020	.012	.003	.011	.009	.025	.003	.016	.000	.020	.012	.016	.018	.020	.012	.014	.018	.007	.005	.011	.010	.010
7.	.020	.019	.006	.005	.000	.012	.005	.007	.005	.003	.005	.007	.010	.000	.000	.000	.005	.002	.012	.016	.010	.002	.000	.005
8.	.016	.007	.000	.000	.007	.015	.011	.004	.002	.000	.000	.036	.020	.007	.004	.003	.012	.013	.009	.024	.007	.008	.007	.014
9.	.075	.022	.022	.054	.150	.022	.011	.000	.000	.005	.008	.007	.003	.007	.000	.007	.005	.008	.000	.008	.018	.018	.022	.015
10.	.037	.032	.016	.015	.002	.016	.022	.026	.018	.027	.014	.041	.038	.017	.012	.011	.018	.004	.013	.023	.031	.082	.043	.013
11.	.029	.027	.022	.018	.007	.008	.010	.013	.003	.015	.012	.006	.007	.013	.008	.037	.012	.010	.005	.019	.020	.028	.030	.018
12.	.026	.035	.010	.030	.002	015	.023	.028	.028	.024	.050	.050	.048	.038	.031	.023	.049	.048	.050	.049	.038	.038	.023	.021
13.	.017	.014	.011	.057	.046	.029	.023	.026	.028	.020	.022	.016	.023	.032	.023	.020	.038	.037	.029	.020	.019	.018	.021	.010
14.	.000	.014	.000	.000	.003	.016	.016	.020	.005	.008	.004	.023	.006	.009	.009	.005	.018	.020	.009	.006	.002	.049	.020	.007
15.	.013	.032	.002	.028	.007	.007	.010	.026	.022	.019	.013	.023	.016	.032	.030	.040	.040	.039	.039	.042	.075	.162	.155	.159
16.	.173	.170	.176	.139	.073	.018	.035	.028	.028	.012	.005	.024	.025	.019	.026	.030	.005	.003	.003	.011	.010	.011	.003	.003
17.	.003	.003	.005	.005	.022	.033	.036	.038	.029	.018	.022	.015	.018	.011	.008	.022	.039	.028	.029	.042	.050	.034	.018	.019
18.	.014	.015	.016	.020	.038	.028	.039	.031	.020	.004	.000	.007	.011	.007	.017	.009	.020	.031	.023	.005	.014	.021	.014	.010
19.	.026	.022	.014	.012	.012	.003	.005	.011	.005	.000	.000	.010	.005	.003	.005	.003	.012	.010	.010	.008	.007	.013	.013	.018
20.	.018	.025	.021	.020	.009	.020	.019	.030	.021	.015	.009	.013	.023	.004	.038	.032	.029	.010	.009	.020	.009	.014	.018	.030
21.	.028	.008	.025	.031	.034	.031	.012	.014	.003	.008	.008	.003	.012	.003	.008	.017	.003	.004	.019	.012	.009	.006	.007	.017
22.	.000	.000	.006	.004	.030	.096	.003	.040	.010	.005	.008	.014	.015	.013	.003	.024	.003	.002	.017	.013	.030	.045	.030	.025
23.	.020	.018	.085	.048	.027	.038	.029	.023	.011	.005	.000	.005	.024	.011	.018	.022	.026	.018	.027	.010	.013	.011	.012	.003
24.	.160	059	.038	.150	.050	.039	.033	.035	.027	.013	.005	.002	.005	.005	.002	.005	.018	.020	.038	.013	.010	.001	.003	.007
25.	.000	.023	.015	.001	.008	.012	.005	.017	.012	.025	.006	.003	.013	.003	.002	.002	.002	.003	.008	.003	.014	.011	.022	.010
26.	.023	.040	.020	.040	.014	.002	.007	.010	.000	.020	.010	.002	.010	.002	.011	.011	.011	.011	.011	.011	.011	.033	.050	.064
27.	.028	.044	.036	.041	.033	.060	.147	.044	.056	.046	.038	.055	.038	.014	.040	.029	.010	.014	.014	.013	.013	.008	.002	.017
28.	.005	.000	.011	.010	.021	.031	.015	.026	.008	.010	.012	.010	.012	.010	.009	.010	.025	.029	.030	.020	.032	.012	.015	.010
29.	.001	.003	.002	.020	.029	.025	.022	.010	.007	.010	.013	.001	.020	.002	.002	.008	.018	.021	.036	.005	.000	.004	.007	.003
30.	.003	.003	.003	.003	.001	.001	.002	.013	.017	.019	.007	.001	.000	.000	.000	.000	.009	.015	.009	.011	.002	.009	.001	.017
31.	.007	.001	.012	.004	.001	.000	.000	.007	.010	.019	.001	.001	.000	.000	.000	.001	.000	.001	.014	.010	.004	.014	.011	.015

-BAROGRAPH.

RIC DISTURBANCE FOR APRIL, 1870.

10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-0
in.	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*
.005	.001	.003	.008	.002	.019	.014	.005	.002	.040	.001	.023	.020	.023
.009	.013	.005	.015	.002	.004	.006	.012	.020	.001	.010	.006	.019	.009
012	.005	.013	003	.003	.006	.021	.020	.015	.035	.038	.025	.020	.025
.054	.054	.030	.022	.029	.041	.038	.024	.020	.030	.030	.027	.020	.018
.013	.001	.000	.007	.010	.001	.005	.010	.010	.002	.001	.002	.012	.003
.002	.000	.000	.000	.010	.000	.001	.013	.020	.010	.012	.008	.006	.011
.002	.009	.002	.002	.005	.002	.016	.022	.008	.002	.000	.005	.012	.002
.005	.005	.001	.008	.015	.001	.009	.001	.002	.004	.002	.002	.006	.014
010	.000	.026	.012	.003	.018	.012	.013	.008	.013	.006	.015	001	.022
.001	.001	.001	.001	.001	.002	.003	.000	.012	.000	.011	.030	.027	.023
.029	.014	.012	.011	.000	.030	.000	.000	.003	.000	.001	.008	.007	.026
.027	.002	.017	.012	.026	010	.022	.015	.037	.037	.007	.002	.007	.012
.001	.000	.002	.002	002	.000	.006	.010	.007	.012	.025	.020	.018	.031
.012	.009	.009	.003	.007	005	.009	.020	.020	.028	.008	.025	.022	.007
.022	.010	.015	.002	.008	008	.025	.007	.011	.011	.013	.007	.024	.016
.018	.002	.016	.019	.014	.017	.003	.008	.000	.002	.025	.020	.022	.037
.017	.007	.009	.009	.018	010	.011	.005	.010	.040	.011	.060	.036	.060
.025	.015	.002	.005	.000	.021	.010	.019	.013	.016	.008	.003	.002	.000
.010	.009	.001	.001	.009	.007	.000	.005	.009	.004	.010	.008	.000	.000
.002	.002	.002	.000	.002	.000	.005	.008	.008	.005	.002	.000	.000	.000
.004	.012	.008	.005	.011	.013	.020	.022	.020	.016	.003	.002	.010	.014
.002	.006	.007	.000	.000	.000	.000	.000	.008	.011	.005	.020	.009	.002
.000	.006	.002	.001	.000	.002	.000	.001	.003	.000	.001	.020	.012	.030
.100	.022	.095	.109	.025	.030	.060	.050	.066	.032	.017	.025	.025	.010
.013	.012	.008	.008	.011	.000	.000	.000	.011	.016	.024	.025	.032	.032
.005	.000	.003	.002	.006	.003	.009	.002	.000	.007	.000	.027	.035	.031
.003	.011	.012	.007	.012	.015	.011	.015	.009	.012	.007	.010	.074	.009
.005	.018	008	.008	.008	.019	.005	.034	.028	.001	.001	.008	.001	.006
.016	.010	.002	.000	.001	.000	.000	.011	.007	.001	.002	.005	.020	.030
.008	.005	.012	.022	.013	.032	.018	.016	.012	.024	.028	.009	.012	.005

TYPO-BAROGRAPH.

HOURLY BAROMETRIC DISTURBANCE FOR MAY, 1870.

DATE.	0–1	1–2	2–3	3–4	4–5	5–6	6–7	7–8	8–9	9–10	10–11	11–12	12–13	13–14	14–15	15–16	16–17	17–18	18–19	19–20	20–21	21–22	22–23	23–0
	in.	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*
1.	.010	.015	.010	.019	.022	.032	.026	.036	.030	.025	.020	.020	.016	.012	.008	.012	.015	.023	.010	.012	.009	.005	.010	.015
2.	.018	.010	.015	.025	.012	.008	.007	.004	.004	.006	.002	.005	.009	.009	.007	.005	.000	.000	.000	.016	.030	.025	.032	.040
3.	.032	.040	.040	.026	.015	.020	.015	.007	.007	.013	.017	.010	.030	.020	.025	.010	.024	.001	.007	.007	.015	.020	.030	.025
4.	.010	.005	.122	.035	.035	.032	.055	.050	.042	.040	.032	.016	.010	.025	.011	.000	.003	.018	.016	.003	.001	.000	.012	.027
5.	.030	.022	.031	.028	.010	.000	.002	.022	.012	.005	.010	.002	.012	.010	.002	.010	.005	.003	.003	.008	.021	.620	.020	.029
6.	.048	.039	.046	.035	.018	.008	.000	.000	.011	.005	.023	.005	.009	.009	.015	.015	.009	.008	.002	.011	.011	.025	.000	.000
7.	.020	.008	.000	.025	.005	.018	.038	.019	.022	.005	.007	.009	.010	.005	.007	.002	.000	.012	.012	.008	.000	.010	.000	.008
8.	.005	.011	.011	.022	.000	.003	.007	.007	.016	.003	.005	.000	.001	.000	.005	.002	.012	.015	.008	.013	.002	.005	.000	.003
9.	.002	.002	.009	.012	.012	.022	.022	.012	.015	.011	.002	.005	.005	.009	.007	.002	.012	.011	.002	.010	.009	.002	.002	.000
10.	.012	.000	.020	.002	.002	.001	.007	.009	.012	.002	.004	.002	.011	.009	.000	.012	.000	.000	.024	.007	.009	.003	.007	.006
11.	.008	.008	.008	.007	.007	.007	.007	.007	.007	.005	.005	.007	.020	.002	.007	.006	.000	.008	.015	.013	003	.000	.010	.005
12.	.000	.010	.000	.000	.000	.000	.000	.011	.021	.002	.011	.002	.000	.000	.000	.000	.000	.000	.002	.008	.002	.008	.010	.022
13.	.010	.028	.007	.000	.000	.004	.028	.020	.018	.007	.011	.008	.000	.012	.001	.000	.010	.005	.008	.008	.008	.007	.013	.005
14.	.000	.008	.024	.018	.008	.002	.008	.021	.015	.008	.007	.008	.000	.009	.007	.009	.008	.008	.008	.000	.003	.008	.010	.014
15.	.015	.018	.029	.010	.007	007	.000	.012	.011	.002	.005	.005	.002	.002	.003	.007	.010	.010	.010	.027	.000	.012	.003	.019
16.	.025	.021	.021	.006	.002	.001	.038	.031	.027	.029	.009	.014	.008	.000	.000	.009	.012	.025	.012	.029	.017	.017	.005	.019
17.	.008	.000	.000	.003	.013	.011	.008	.020	.020	.008	.017	.003	.003	.000	.000	.004	.025	.016	.005	.020	.008	.020	.007	.008
18.	.000	.018	.020	.011	.009	.005	.000	.005	.020	.026	.005	.005	.005	.005	.002	.000	.002	.007	.005	.008	.020	.042	.016	.031
19.	.020	.030	.030	.011	.012	.007	.015	.050	.036	.016	.010	.005	.001	.000	.000	.006	.010	.014	.012	.009	.008	.005	.011	.010
20.	.030	.006	.008	.010	.010	.002	.005	.012	.023	.005	.010	.014	.002	.006	.000	.000	.010	.000	.001	.004	.010	.005	.035	.030
21.	.010	.025	.036	.012	.010	.008	.012	.005	.020	.017	.002	.007	.014	.015	.012	.010	.034	.029	.034	.018	.000	.000	.000	.009
22.	.021	.015	.010	.015	.005	.000	.019	.018	.033	.017	.000	.000	.000	.009	.000	.006	.012	.000	.009	.000	.010	.013	.018	.024
23.	.028	.020	.020	.032	.022	.018	.010	.020	.015	.012	.030	.049	.028	.012	.010	.007	.003	.005	.008	.008	.011	.016	.005	.010
24.	.013	.010	.002	.005	.005	.005	.000	.000	.001	.001	.010	.026	.000	.000	.000	.006	.008	.003	.012	.009	.000	.005	.004	.000
25.	.002	.000	.000	.000	.008	.002	.019	.017	.030	.005	.002	.005	.004	.000	.006	.000	.021	.008	.001	.015	.005	.002	.007	.003
26.	.009	.015	.007	.003	.004	.000	.000	.015	.026	.003	.005	.000	.007	.003	.000	.001	.019	.017	.001	.022	.000	.002	.019	.010
27.	.018	.017	.008	.005	.004	.004	.000	.012	.025	.007	.000	.018	.015	.015	.004	.008	.000	.000	.000	.003	.015	.017	.011	.009
28.	.012	.008	.002	.005	.004	.002	.005	.006	.002	.005	.000	.005	.000	.000	.000	.005	.005	.020	.008	.012	.020	.005	.002	.000
29.	.000	.000	.008	.000	.000	.002	.010	.005	.018	.005	.006	.010	.008	.012	.005	.012	.022	.010	.020	.012	.002	.000	.000	.000
30.	.004	.008	.002	.001	.005	.000	.019	.020	.029	.011	.008	.013	.002	.002	.002	.011	.022	.017	.010	.008	.000	005	.003	.013
31.	.013	.027	.008	.009	.016	.002	.000	.000	.006	.002	.001	.001	.012	.002	.009	.000	.000	.001	.007	.002	.018	.010	.010	.019

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
.000	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
.000	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
.005	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
.004	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
.002	.002	[illegible]	[illegible]	[illegible]	[illegible]	.002	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.011	[illegible]
.000	.008	[illegible]	[illegible]	[illegible]	.007	.004	[illegible]	[illegible]	[illegible]	.004	[illegible]	.008	.009
.005	.008	.009	.001	.008	.000	.000	[illegible]	[illegible]	[illegible]	[illegible]	.006	.008	.008
.009	.004	.004	.010	.000	.000	.018	.007	.001	.008	.001	.016	.013	.018
.004	.002	.002	.008	.002	.002	.005	.008	.005	.005	.000	.031	.003	.010
.001	.009	.002	.000	.000	.000	.000	.002	.005	.003	.000	.002	.007	.009
.003	.001	.000	.000	.000	.000	.001	.000	.001	.008	.000	.001	.003	.000
.008	.001	.001	.002	.001	.002	.010	.003	.000	.002	.009	.011	.007	.010
.011	.002	.008	.000	.003	.006	.005	.006	.018	.003	.001	.000	.000	.004
.000	.000	.008	.008	.017	.000	.000	.000	.000	.002	.000	.011	.031	.034
.008	.011	.018	.010	.032	.013	.040	.028	.020	.019	.005	.012	.002	.005
.015	.002	.010	.010	.016	.013	.016	.021	.013	.004	.000	.005	.019	.019
.007	.008	.000	.010	.006	.014	.008	.028	.000	.015	.000	.030	.012	.028
.002	.009	.005	.002	.002	.008	.020	.002	.002	.005	.002	.040	.012	.009
.000	.005	.008	.000	.012	.000	.012	.005	.002	.007	.007	.012	.015	.020
.008	.003	.000	.001	.010	.009	.010	.010	.014	.014	.009	.008	.003	.010
.009	.000	.000	.000	.000	.001	.008	.000	.000	.000	.033	.009	.021	.021
.001	.001	.008	.017	.003	.000	.000	.005	.000	.005	.013	.012	.002	.002
.008	.005	.007	.000	.019	.002	.019	.010	.035	.023	.007	.009	.005	.005
.009	.012	.012	.007	.002	.003	.000	.002	.001	.001	.004	.028	.020	.021
....	....	....	....	....	....	....	....	....	....	....	....	....	....

TYPO-BAROGRAPH.

HOURLY BAROMETRIC DISTURBANCE FOR JULY, 1870.

DATE.	0–1	1–2	2–3	3–4	4–5	5–6	6–7	7–8	8–9	9–10	10–11	11–12	12–13	13–14	14–15	15–16	16–17	17–18	18–19	19–20	20–21	21–22	22–23	23–0
	in.	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*
1.	.002	.000	.006	.000	.000	.015	.019	.014	.032	.015	.009	.014	.002	.007	.001	.006	.017	.013	.006	.010	.015	.003	.006	.001
2.	.019	.000	.010	.012	.013	.003	.000	.006	.017	.001	.004	.004	.006	.006	.002	.000	.014	.003	.000	.003	.008	.000	.001	.004
3.	.019	.018	.002	.000	.004	.002	.001	.000	.010	.012	.003	.002	.004	.002	.000	.002	.011	.018	.003	.002	.002	.008	.000	.018
4.	.013	.011	.022	.015	.011	.002	.002	.013	.022	.018	.008	.001	.006	.000	.012	.012	.011	.008	.008	.003	.007	.016	.020	.000
5.	.007	.002	.033	.000	.006	.000	.010	.010	.022	.009	.003	.001	.000	.000	.000	.008	.003	.010	.004	.000	.002	.000	.010	.011
6.	.018	.012	.009	.013	.013	.011	.001	.010	.010	.003	.001	.006	.006	.015	.008	.001	.001	.000	.003	.001	.025	.011	.015	.015
7.	.026	.030	.020	.015	.018	.016	.004	.009	.009	.017	.026	.046	.020	.015	.008	.025	.019	.013	.020	.015	.008	.005	.003	.016
8.	.012	.013	.019	.040	.020	.022	.024	.018	.022	.008	.009	.011	.003	.001	.002	.013	.014	.030	.020	.020	.012	.020	.016	.051
9.	.027	.025	.012	.004	.006	.008	.008	.010	.019	.006	.016	.006	.000	.007	.006	.001	.012	.011	.004	.004	.014	.013	.018	.015
10.	.006	.011	.020	.011	.009	.003	.000	.009	.021	.021	.007	.005	.005	.000	.000	.000	.000	.001	.002	.004	.010	.000	.009	.018
11.	.011	.022	.013	.011	.020	.013	.003	.016	.006	.011	.000	.013	.033	.006	.030	.027	.009	.009	.003	.000	.007	.003	.001	.001
12.	.003	.014	.018	.008	.019	.000	.001	.001	.010	.008	.040	.004	.008	.002	.003	.003	.006	.008	.019	.014	.008	.001	.000	.010
13.	.013	.010	.015	.010	.009	.003	.000	.007	.014	.008	.000	.012	.002	.002	.011	.007	.002	.002	.000	.008	.011	.008	.003	.027
14.	.023	.054	.011	.023	.008	.009	.022	.020	.026	.011	.023	.015	.002	.007	.006	.017	.002	.021	.006	.013	.011	.001	.009	.003
15.	.000	.016	.000	.002	.005	.012	.011	.020	.030	.009	.005	.011	.007	.002	.011	.007	.003	.011	.028	.019	.003	.007	.005	.014
16.	.022	.020	.020	.022	.016	.008	.012	.004	.003	.069	.012	.015	.064	.068	.023	.004	.017	.000	.018	.000	.009	.000	.007	.008
17.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
18.	.006	.013	.015	.000	.045	.009	.010	.009	.002	.018	.009	.010	.009	.000	.002	.000	.009	.012	.020	.011	.012	.000	.020	.006
19.	.008	.001	.006	.000	.005	.000	.002	.043	.013	.010	.008	.014	.005	.000	.001	.006	.020	.011	.000	.000	.010	.010	.011	.022
20.	.020	.027	.005	.018	.031	.011	.037	.000	.000	.005	.011	.011	.013	.003	.008	.015	.019	.040	.040	.040	.010	.006	.008	.014
21.	.013	.032	.032	.030	.013	.020	.020	.022	.020	.013	.008	.013	.007	.003	.000	.016	.013	.010	.011	.007	.006	.010	.003	.013
22.	.007	.020	.015	.016	.003	.011	.021	.005	.015	.013	.012	.004	.015	.007	.001	.003	.009	.008	.001	.012	.007	.008	.010	.020
23.	.063	.007	.015	.010	.015	.010	.008	.002	.021	.016	.001	.001	.002	.002	.003	.013	.007	.003	.003	.006	.003	.023	.018	.010
24.	.026	.050	.021	.031	.020	.012	.014	.005	.028	.014	.018	.005	.003	.003	.000	.003	.014	.016	006	.005	.003	.003	.003	.010
25.	.018	.019	.010	.004	.012	.008	.008	.010	.020	.020	.001	.005	.008	.008	.008	.013	.004	.014	.020	.004	.002	.010	.000	.030
26.	.013	.023	.026	.020	.003	.025	.005	.010	.010	.002	.016	.013	.005	.017	.011	.018	.010	.025	.028	.000	.002	.011	.013	.002
27.	.006	.018	.000	.000	.010	.018	.006	.014	.014	.001	.001	.000	.003	.006	.006	.003	.000	.008	.003	.002	.002	.002	.001	.006
28.	.010	.021	.018	.023	.023	.021	.003	.023	.000	.010	.001	.012	.010	.009	.017	.003	.001	.007	.009	.003	.006	.006	.016	.012
29.	.069	.026	.015	.001	.001	.021	.021	.025	.031	.020	.012	.010	.007	.002	.000	.002	.013	.032	.011	000	.002	.002	.010	.000
30.	.006	.006	.006	.004	.005	.011	.016	.010	.024	.011	.018	.012	.008	.010	.001	.006	.006	.006	.014	.000	.000	.013	.013	.021
31.	.010	.016	.018	.020	.018	.009	.002	.003	.002	.012	.001	.001	.000	.002	.000	.002	.001	.001	.009	.001	.008	.010	.017	.015

BAROGRAPH.

ISTURBANCE FOR AUGUST, 1870.

10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-0
in.	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*
.006	.007	.009	.001	.000	.000	.010	.007	.003	.006	.001	.001	.003	.008
.010	.001	.000	.004	.004	.000	.015	.007	.003	.006	.010	.008	.018	012
.000	.020	.008	.004	.003	.003	.001	.000	.010	.008	.003	010	.022	.005
.000	.000	.000	.001	.000	.009	.007	.010	.001	.005	.008	.018	.018	.018
.010	.002	.002	.001	.000	.011	.023	016	.018	.002	.001	.003	.000	003
.007	.007	.004	.012	.003	.006	.008	.021	.012	.005	.010	.010	.003	.005
.005	.007	.003	.012	.003	.002	.005	.005	.009	.010	.003	.002	.021	.012
.007	.013	.005	.004	.000	.011	.007	.005	.016	.009	.001	.002	.012	.012
.010	'010	.013	.018	.011	.002	.009	.001	.001	.006	.009	.010	.013	.001
.004	.000	.003	.000	.000	.007	.002	.010	.018	.010	.003	.003	.002	.002
.005	.002	.018	.013	.000	.000	.002	.002	.005	.011	.000	.020	.011	.031
.002	.003	.007	.001	.001	.001	.011	.021	.002	.010	.000	.003	006	.008
.003	.003	.000	.000	.000	.000	.000	.000	.000	.000	.018	.001	.002	.005
.003	.006	.001	.001	.000	.003	.015	.024	.008	.012	.011	.003	.000	.014
.005	.001	.000	.000	.000	.000	.000	.004	.001	.005	.004	.022	.009	.028
.000	.000	.002	.006	.006	.000	.002	.008	.006	.002	.010	.016	.008	.010
.006	.001	.015	.004	.003	.006	.011	.019	.017	.005	.008	.007	.000	.002
.006	.016	.001	.000	.001	.019	.014	.003	.000	.011	.001	.001	.008	.027
.008	.001	.000	.006	.000	.000	.001	.000	.004	.017	.012	.017	011	.092
.008	.008	000	.000	.008	.016	.019	.015	.016	.003	.012	.003	.002	.010
.011	.007	.003	.010	.010	.007	.009	.010	.010	.010	.009	.011	.011	.010
.015	.007	.005	.002	.007	005	.002	.007	.002	.010	.005	.003	.014	.022
.000	.014	.004	.008	.001	.001	.010	.003	.003	.008	.000	.000	.006	.020
.004	.018	.000	.004	.003	.011	.011	.000	.003	.003	.012	.003	.022	.028
.001	.026	.022	.043	.036	.027	.036	.037	.023	.013	.023	.020	.021	.028
.014	.021	.006	.006	.001	.011	.010	.018	.020	.003	.002	.002	.006	.020
.000	.001	.010	.000	.004	.006	.001	.001	.000	.000	.003	.013	.019	.033
.014	.001	.008	.004	.010	.018	.003	.001	.000	.013	.009	.021	.012	.020
.010	.017	.037	.009	.014	.021	.042	.028	.014	.015	.001	.035	.005	.003
.009	.003	.000	.000	.007	.009	.007	.017	.007	.000	.005	.006	.004	.017
.000	.013	.001	.007	.002	.004	.011	.016	.002	.017	.000	.001	.002	.009

TYPO-BAROGRAPH.

HOURLY BAROMETRIC DISTURBANCE FOR SEPTEMBER, 1870.

DATE.	0–1	1–2	2–3	3–4	4–5	5–6	6–7	7–8	8–9	9–10	10–11	11–12	12–13	13–14	14–15	15–16	16–17	17–18	18–19	19–20	20–21	21–22	22–23	23-0
	in.	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*
1.	.022	.010	.016	.002	.008	.001	.006	.010	.006	.012	.018	.001	.000	.003	.001	.001	.004	.009	.000	.004	.005	.008	.013	.012
2.	.021	.012	.015	.013	.007	.001	.002	.005	.002	.000	.000	.005	001	.009	.010	.000	.000	.000	.005	.001	.005	.014	.011	.020
3.	.028	.018	.013	.018	.019	.008	.007	.006	.006	.008	.005	.005	.018	.016	.003	.006	.008	.003	.010	.003	.000	.000	.000	.005
4.	.006	.016	.027	.007	.033	.022	.017	.024	.018	.014	.010	.023	.005	.010	.013	.019	.011	.030	.009	.030	.016	.016	.007	.003
5.	.005	.005	.011	.009	.030	.020	.012	.021	.009	.002	.015	.009	.000	.003	.020	.007	.017	.029	.015	.010	.005	.000	.000	.018
6.	.011	.010	.010	.009	.002	.011	.011	.017	.020	.007	.002	.004	.002	.009	.010	.011	.023	.028	.005	.002	.002	.000	.003	.010
7.	.014	.012	.020	.015	.011	.000	.013	.030	.012	.024	.025	.001	.000	.006	.017	.008	.022	.017	.018	.012	.005	.008	.000	.010
8.	.015	.017	.023	.011	.010	.005	.013	.015	.000	.000	.000	.000	.005	.015	.010	.000	.000	.000	.000	.003	.000	.016	.014	.025
9.	.017	.031	.030	.016	.027	.008	.000	.009	.007	.009	.000	.010	.019	.025	.011	.000	.007	.008	.001	.003	.003	.020	.006	.003
10.	.010	.016	.014	.008	.003	.015	.022	.026	.023	.009	.027	.003	.001	.003	.001	.005	.020	.016	.014	.001	.009	.001	.005	.022
11.	.013	.026	.006	.001	.001	.011	.033	.037	.020	.012	.003	.009	.005	.005	.009	.003	.019	.022	.015	.003	.015	.000	.011	.011
12.	.011	.024	.011	.011	.009	.000	.003	.020	.010	.017	.015	.009	.004	.000	.013	.004	.011	022	.018	.009	.000	.010	.021	.024
13.	.012	.025	.018	.012	.006	.001	.000	.012	.008	.008	.008	.000	.012	.000	.000	.004	.004	.012	.008	.002	.000	.013	.016	.022
14.	.013	.030	.018	.017	.006	.010	.001	.000	.000	003	.003	.001	.008	.007	.001	.000	.000	.007	.010	.003	.012	.013	.025	.029
15.	.023	.029	.016	.022	.003	.003	.017	.001	.000	.005	.000	.002	.000	.001	.002	.001	.002	.013	.007	.010	.013	.015	.001	.000
16.	.000	.000	.005	.002	.021	.009	.013	.021	.010	.000	.004	.009	.002	.007	.003	.002	.007	.013	.009	.002	.004	.000	.000	.021
17.	.013	.023	.011	.007	.000	.021	.000	.000	.007	.012	.002	.013	.028	.017	.012	.008	.011	.000	.026	.010	.006	.006	.026	.017
18.	.019	.013	.015	.006	.009	.023	.029	.028	.018	.010	.010	.018	.014	.014	.019	.007	.018	.025	.026	.015	.022	.006	.015	.003
19.	.015	.025	.006	.012	.000	.000	.009	.020	.010	.020	.020	.012	.005	.007	.007	.002	.007	.027	.011	.011	.004	.003	.009	.012
20.	.020	.016	.005	.008	.002	.005	.008	.010	.016	.015	.007	.009	.018	.007	.002	.004	.025	.024	.020	.005	.007	.004	.017	.021
21.	.020	.029	.018	.017	.016	.003	.003	.005	.023	.009	.002	.003	.014	.005	.000	.000	.005	.005	.017	.007	.004	.011	.022	.019
22.	.024	.026	.021	.014	.010	.010	.001	.000	.010	.000	.000	.005	.005	.013	.013	.001	.000	.000	.000	.002	.003	.010	.030	.030
23.	.008	.028	.017	.004	.002	.010	.002	.000	.012	.000	.002	.006	.008	.010	.009	.007	.004	.002	.012	.008	.004	.010	.013	.004
24.	.011	.004	.007	.012	.001	.009	.000	.001	.000	.000	.004	.001	.000	.000	.002	.002	.002	.004	.012	.008	.001	.000	.006	.018
25.	.004	.010	.016	.018	.010	.024	.035	.021	.013	.018	.011	.010	.010	.010	.008	.019	.019	.010	.018	.018	.012	.004	.009	.015
26.	.023	.010	.012	.001	.003	.003	.001	.003	.001	.006	.000	.001	.000	.006	.000	.006	.001	.000	.004	.006	.008	.002	.017	.022
27.	.030	.016	.001	.010	.012	.000	.000	.010	.002	.002	.000	.011	.000	.000	.005	.004	.011	.016	.017	.011	.011	.008	.007	.002
28.	.003	.005	.005	.006	.007	.008	.008	.005	.010	.010	.001	.001	.001	.000	.000	.000	.019	.005	.017	.001	.001	.008	.005	.005
29.	.013	.054	.018	.010	.007	.000	.006	.009	.007	.003	.003	.003	.017	.007	.003	.005	.007	.003	.003	.000	.008	.010	.019	.016
30.	.015	.044	.038	.034	.022	.029	.024	.030	.027	.043	.018	.022	.020	.031	.025	.006	.004	.005	.007	.016	.017	.008	010	.001

[illegible]

TYPO-BAROGRAPH.

HOURLY BAROMETRIC DISTURBANCE FOR NOVEMBER, 1870.

DATE.	0–1	1–2	2–3	3–4	4–5	5–6	6–7	7–8	8–9	9–10	10–11	11–12	12–13	13–14	14–15	15–16	16–17	17–18	18–19	19–20	20–21	21–22	22–23	23–0
	in.	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*ir.*	*in.*
1.	.018	.000	.001	.000	.007	.001	.003	.003	.003	.006	.001	.001	.000	.001	.003	.001	.000	000	.003	.010	.000	.003	.015	.038
2.	.033	.023	.027	.014	.008	.002	.000	.006	.010	.012	.022	.018	.007	.010	.015	.018	.018	.024	.015	.008	.010	.027	.034	.006
3.	.049	.020	.012	.016	.027	.014	.018	.039	.036	.022	.020	.032	.016	.010	.027	.016	.025	.016	.027	.004	.042	.043	.013	.009
4.	.010	.010	.002	.004	.005	•.007	.000	.009	.022	.018	.004	.007	.004	.004	.004	.005	.010	.010	.007	.017	.015	.036	.011	.008
5.	.010	.030	.030	.030	.030	.030	.030	.031	.053	.051	.031	.030	.020	.028	.011	.011	.034	.019	.020	.020	.010	.016	.012	.029
6.	.019	.035	.040	.003	.003	.002	.003	.018	.019	.006	.010	.014	.010	.019	.014	.009	.010	.003	.003	.010	.005	.003	.036	.006
7.	.005	.007	.005	.007	.006	.000	.007	.004	.005	.006	.002	.007	.009	.006	.006	.007	.004	.001	.007	.008	.006	.010	.017	.024
8.	.030	.063	.064	.083	.090	.030	.045	.083	.059	.033	.030	.044	.029	.018	.015	.032	.013	.031	.028	.016	.030	.032	.063	.003
9.	.070	.030	.026	.022	.048	.014	.036	.134	.041	.022	.012	.006	.022	.049	.040	.063	.200	.100	.058	048	.072	.150	.092	.180
10.	.350	.120	.070	.080	.033	.040	.040	.026	.028	.012	.018	.004	.017	.001	.003	.003	.000	.006	.003	.001	.012	.009	.027	.050
11.	.044	.035	.027	.025	.017	013	.008	.068	.025	.031	.017	.016	.011	.009	.033	.025	.009	.009	.007	.002	.025	.013	.020	.024
12.	.022	.006	.020	.006	.021	.005	.009	.025	.055	.040	.019	.005	.003	.010	.003	.003	.003	.005	.007	.010	.010	.015	.008	.013
13.	.058	.094	.088	.070	.030	.012	.013	.018	.018	.014	.006	.006	.003	.005	.004	.006	.008	.003	.004	.014	.010	.018	.030	.036
14.	.038	.030	.047	.021	.008	.012	.013	.021	.008	021	.023	.025	.023	.016	.006	.019	.008	.014	.020	.009	.016	.012	.004	.016
15.	.016	.001	.008	.010	.013	.006	.004	.008	.010	.025	.004	.008	.010	.008	.006	.003	.018	.012	.019	.019	.023	.038	.004	.001
16.	.002	.000	.013	.033	.015	.013	.017	.021	.011	.009	.013	.003	.009	.007	.009	.005	.007	.007	.016	.015	.003	.023	.026	.026
17.	.032	.011	.011	.009	.000	.005	.003	.005	.007	.025	.005	.007	.020	.007	.013	.013	.005	.007	.010	.018	.027	.020	.033	.034
18.	.015	.001	.010	.004	.023	.023	.036	.124	.036	.019	.007	.007	.009	.010	.012	.010	.004	.007	.002	.002	.012	.052	.062	.132
19.	.122	.070	.028	.100	.065	.062	.012	.067	.034	.098	.090	.180	.039	.042	.029	.022	.020	.015	.030	.023	.040	.028	.025	.022
20.	.020	.014	.023	.024	.015	.005	.015	.015	.012	.015	.012	.020	.005	.028	.016	.013	.023	.023	.015	.028	.040	.080	.018	.010
21.	.018	.010	.060	.020	.050	.033	.070	.041	.028	.030	.022	.020	.052	.057	.030	.022	.043	.023	.040	.036	.055	.090	.070	.061
22.	.052	.046	.020	.022	.028	.041	.043	.098	.072	.100	.097	.105	.050	.083	.040	.065	.030	.034	.018	.005	.028	.130	.087	.017
23.	.005	023	.024	.060	.035	.018	.020	.023	.032	.029	.021	.031	.176	.168	.200	.080	.061	.016	.070	.030	.011	.015	.003	.010
24.	.004	.015	.026	.036	.103	.032	.030	.020	.010	.020	.020	.035	.003	.018	.005	.001	.007	.007	.009	.012	.008	.018	.023	.032
25.	.048	.020	.025	.023	.032	.056	.014	.060	.060	.094	.032	.115	.080	.055	.080	.042	.030	.081	.051	.005	.020	058	.060	.020
26.	.005	.008	.008	.014	.017	.017	.001	.004	.008	.023	.012	.020	.021	.016	.023	.036	.030	.060	.048	.068	.030	.017	.023	.030
27.	.180	.005	.028	.025	.020	.033	.028	.094	.034	.034	.008	.028	.015	.020	.033	.001	.011	.010	.020	.014	.017	.026	.022	.022
28.	.029	.007	.002	.002	.002	.000	.002	.002	.004	.006	.010	.001	.012	.012	.000	.010	.001	.007	.011	.013	.003	.008	.006	.012
29.	.010	.002	.061	.058	.037	.021	.002	.024	.029	.010	.002	.002	.007	.033	.007	.001	.011	.010	.020	.006	.023	.021	.005	.012
30.	.031	.020	.005	.010	.002	.004	.006	.002	.011	.029	.017	.010	.015	.008	.008	.008	.021	.008	.004	.002	.010	.023	.038	.048

TYPO-BAROGRAPH.

Hourly Barometric Disturbance for December, 1870.

Date.	0–1	1–2	2–3	3–4	4–5	5–6	6–7	7–8	8–9	9–10	10–11	11–12	12–13	13–14	14–15	15–16	16–17	17–18	18–19	19–20	20–21	21–22	22–23	23–0
	in.	*in.*	*in.*	*in.*	*in*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*
1.	.030	.040	.025	.020	.013	017	.023	.015	.021	.020	.003	.020	.011	.017	.013	.007	.020	.003	.004	.002	.000	.010	.025	.019
2.	.033	.002	.009	.006	.001	.000	.018	.001	.000	.006	.012	.030	.039	.040	.037	.015	.029	.029	.033	.015	.037	.038	.008	.009
3.	.024	.010	.004	.011	.014	.008	.009	.022	.000	.014	.016	.002	.000	.000	.011	.020	014	.006	.004	.030	.020	.037	.030	.035
4.	.030	.007	016	.006	.020	.017	.016	.014	.012	.010	.007	.010	.003	.022	.015	.002	.007	.012	.019	.018	.021	.023	.040	.030
5.	.030	.031	.035	.015	.018	.022	.022	.054	.013	.016	.030	.048	.032	.020	.002	.020	.002	.002	.010	.002	.002	.025	.008	.000
6.	.003	.020	.020	.040	.032	.005	.025	.058	037	.041	.023	.028	.031	.017	.030	.030	.009	.028	.028	.003	.011	.020	.032	.022
7.	.026	.034	.013	.034	.009	.030	.084	.057	.045	.035	.010	026	.018	.009	.002	.002	.002	.000	.000	.002	.000	.012	.003	.006
8.	.002	.009	.020	.014	.020	.023	.026	.023	.020	.009	.020	.033	.013	.021	.013	.011	.018	.015	.023	.039	.021	.022	.009	.013
9.	.009	.017	.013	.017	.017	.010	.018	.004	.008	.000	.024	.001	.000	.006	.003	.001	.002	.006	.000	.003	.023	.003	.023	.025
10.	.040	.028	.042	.030	.031	.031	.038	.038	.029	.029	.019	.010	.012	.022	.010	.000	.002	.004	.020	.014	.027	.017	.010	.009
11.	.025	.007	.001	.002	.012	.000	.003	.004	.017	.045	.027	.034	.008	.007	.029	.020	.017	.048	.041	.040	.022	.034	.037	.049
12.	.039	.036	.034	.028	.025	.017	.010	.017	.007	.017	.007	.010	.015	.007	.000	.010	.002	.002	.002	.002	.000	.008	.009	.016
13	.020	.008	.007	.000	.010	.008	.000	.005	.012	.002	.008	.010	.021	.004	.011	.018	.002	.002	.008	.001	.000	.013	.013	.007
14.	.005	.000	.003	.005	.005	.012	.000	.000	.002	.030	.009	.012	.010	.006	.045	.028	.081	.092	.030	.060	.021	.030	.048	.111
15.	.200	.220	.220	.195	.136	.200	.240	.220	.090	.175	.175	.152	.200	.150	.180	.200	.190	.124	.098	.093	.170	.110	.080	.065
16.	.108	.114	.138	.165	.060	.020	.020	.040	.011	.019	.015	.008	.007	.011	.007	.007	.011	.002	.002	.005	.005	.008	.037	.057
17.	.039	.029	.022	.015	.020	.020	.019	.021	.014	.018	.020	.020	.013	.005	.000	.010	.011	.023	.008	.017	.022	.020	.032	.012
18.	.013	.013	.020	.025	.034	.034	.034	.013	.011	.008	.020	.015	.020	.028	.015	.010	.034	.028	.017	.056	.030	.040	.036	.031
19.	.020	.019	.020	.006	.029	.020	.020	.015	.042	.053	.031	.084	.042	.074	.046	.042	.054	.019	.020	.032	.015	.008	.016	.010
20	.014	.048	.025	.023	.017	.038	.013	.013	.007	.005	.020	.000	.008	.010	.010	.010	.042	.039	.025	.034	.036	.055	.041	.026
21.	.034	.039	.042	.045	.059	.042	.078	.044	.026	.020	.007	.019	.017	.011	.010	.006	.002	.010	.020	.028	.009	.039	.024	.040
22.	.023	.017	.010	.009	.010	.003	.008	.002	.001	.003	.006	.003	.006	.010	.010	.002	.008	.008	.010	.017	.050	.013	.023	.021
23.	.000	.000	.000	.001	.008	.020	.050	.022	.017	.010	.020	.028	.038	.060	.185	.070	.095	.012	.007	.003	.002	.100	.070	.190
24.	.098	.140	.070	.107	.112	.020	.062	.182	.072	.177	.050	.022	.019	.038	.028	.026	.040	.029	.013	.022	.022	.028	.042	.019
25.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	...	....	....	....	....	....	...	....	....
26.	....	....	....	....	....	..	....	....	....	...	....	....	....	....	....	....	....	....	....	....	....	....	....	....
27.	.030	.038	.023	.015	.022	.019	.003	.020	.016	.013	.030	.010	.012	.002	.005	.005	.017	.010	.007	.010	.009	.019	.009	.025
28.	.027	.009	.012	.011	.011	.015	.017	.073	.030	.020	.028	.058	.038	.036	.046	.024	.016	.014	.020	.022	.018	.032	.030	.037
29.	.016	.018	.023	.030	.021	.021	.029	.028	.017	.012	.010	.002	.007	.029	.010	.010	.007	.012	.017	.010	.017	.024	.033	.035
30.	.031	.042	.040	.020	.046	.058	.088	.033	.023	.022	.008	.033	.007	.014	.005	.030	.036	.017	.018	.014	.013	.023	.043	.030
31.	.004	.002	.020	.031	.019	.020	.009	.019	.009	.012	.014	.008	.010	.039	.027	.030	.030	.018	.017	.007	.018	.000	.012	.012

TYPO-BAROGRAPH.

MEAN HOURLY BAROMETRIC DISTURBANCE FOR 1870.

HOUR.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November	December.	Mean for the year.	Bi-hourly mean for the year.
	in.	*in.*	*in.*	*in*	*in.*	*in.*	*in.*	*in*	*in.*	*in.*	*in.*	*in.*	*in.*	*in.*
0...	.036	.042	.031	.014	.014	.014	.016	.018	.015	.035	.045	.034	.026	....
1...	.028	.039	.027	.014	.014	.013	.018	.015	.019	.029	.025	.034	.023	.024
2...	.031	.045	.027	.014	.018	.012	.015	.019	.015	.020	.027	.032	.023	....
3...	.025	.032	.029	.011	.013	.014	.012	.014	.011	.023	.028	.032	.020	.021
4...	.024	.030	.025	.011	.009	.008	.013	.010	.010	.026	.026	.029	.018	....
5...	.024	.028	.023	.011	.007	.008	.010	.009	.009	.023	.019	.026	.016	.017
6...	.022	.023	.021	.011	.012	.007	.010	.011	.010	.023	.014	.034	.016	....
7...	.025	.026	.020	.016	.015	.010	.012	.012	.013	.028	.034	.036	.021	.019
8...	.020	.022	.014	.014	.019	.012	.016	.011	.010	.026	.026	.021	.017	....
9...	.026	.021	.019	.012	.010	.005	.013	.008	.009	.021	.029	.029	.017	.017
10...	.021	.020	.010	.014	.009	.005	.009	.006	.007	.015	.020	.023	.013	....
11...	.021	.022	.014	.009	.009	.004	.009	.008	.007	.014	.027	.025	.014	.013
12...	.025	.022	.015	.011	.008	.004	.009	.006	.007	.018	.023	.023	.014	....
13...	.032	.022	.011	.010	.007	.004	.007	.006	.008	.014	.025	.025	.015	.014
14...	.033	.023	.011	.008	.005	.007	.006	.004	.008	.013	.023	.028	.014	....
15...	.029	.019	.014	.010	.006	.004	.008	.007	.005	.013	.019	.023	.013	.013
16...	.029	.020	.016	.011	.010	.009	.009	.010	.010	.016	.022	.028	.016	....
17...	.027	.021	.016	.012	.009	.009	.012	.010	.012	.015	.019	.021	.015	.016
18...	.028	.022	.018	.013	.009	.007	.011	.008	.011	.019	.020	.018	.015	....
19...	.027	.025	.017	.014	.016	.005	.007	.008	.007	.019	.016	.021	.016	.015
20...	.033	.025	.019	.014	.009	.005	.007	.006	.007	.016	.020	.022	.015	....
21...	.033	.034	.024	.015	.010	.010	.007	.009	.007	.021	.034	.028	.019	.017
22...	.027	.029	.021	.017	.010	.009	.009	.009	.011	.025	.030	.028	.018	....
23...	.036	.033	.021	.017	.013	.011	.013	.017	.014	.031	.031	.033	.022	.020

The numbers, from page 220 to 232 inclusive, represent thousandths of inches, and indicate the amount of barometric disturbance in each separate hour, for the whole year; 0 hours indicating noon, and 12 hours midnight. The numbers on page 233 are the means of separate hours for the year.

ON THE PROPAGATION OF ATMOSPHERIC PRESSURE.

The great waves of atmospheric pressure follow each other at indefinite periods of time, generally at intervals of from three to six days.

In this latitude, the direction of propagation is pretty uniformly the same, viz., from west to east. The diagram, Fig. 8, exhibits the continuous record of the printing barometer for the same time at a number of different stations.

The first four curves are for the month of October, 1867. No. 1 is for New York city; No. 2, Rutgers College; No. 3, Albany, and No. 4, Dartmouth College.

The last two curves are for December, 1870. No. 5 is for the Signal Office, Washington, and No. 6, Albany.

On the weather sheets for January and February, 1869, will be found additional records for Dartmouth College and Albany.

An examination of these curves show that for stations on the same longitude, the maxima and minima occur cotemporaneously; while for stations differing in longitude, the maxima and minima occur soonest at the western station.

The rate of propagation from west to east is not entirely uniform, but is apparently modified by the size of the wave and the direction of the wind.

We would here express our obligations to the following gentlemen, for records furnished us:

Prof. C. A. Young, Dartmouth College.

Prof. David Murray, Rutgers College.

Gen. A. J. Myers and Capt. Howgate, Signal Office, Washington.

Geo. Wilson, Esq., Secretary N. Y. Chamber of Commerce.

Dr. James Lewis, Mohawk, N. Y.

David Peelor, C. E., Johnstown, Pa.

Dr. Morris, Deaf and Dumb Asylum, New York city.

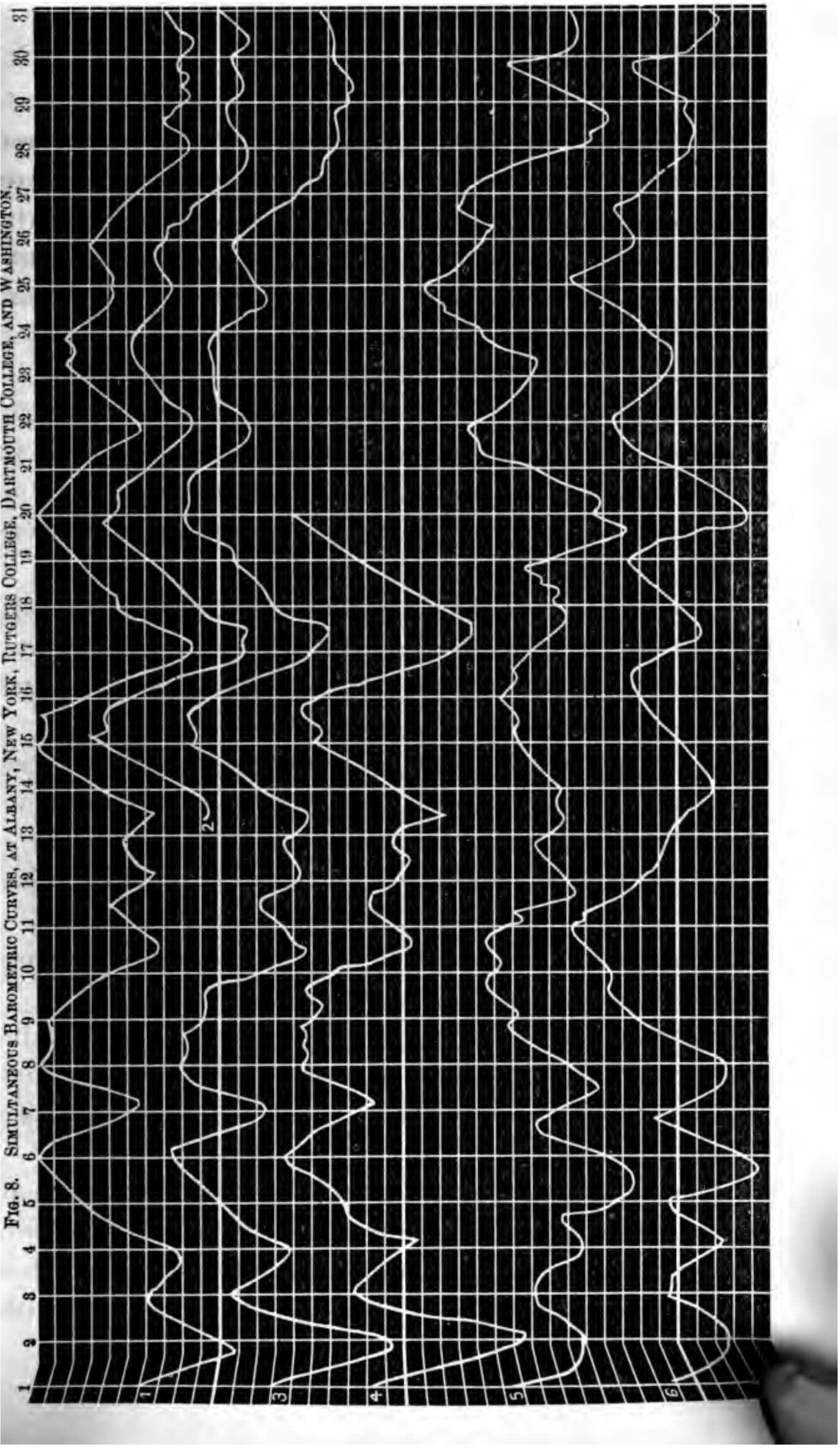


FIG. 8. SIMULTANEOUS BAROMETRIC CURVES, AT ALBANY, NEW YORK, RUTGERS COLLEGE, DARTMOUTH COLLEGE, AND WASHINGTON.

Gen. A. J. Abbott, Willet's Point, N. Y.
Dr. I. A. Lapham, Milwaukie, Wis.

The records at the four stations first enumerated were made by the printing barometer. At Mohawk, N. Y., and Johnstown, Pa., the records were by recording instruments. At the remaining stations, hourly readings were made in the usual way.

The following results have been deduced by the comparison of a large number of continuous readings:

For Albany and Dartmouth College, the mean difference for the times of maxima and minima, from a discussion of the hourly printed records, for one month, is 1h. 15m.; equivalent to 12 hours for one hour of longitude. Nearly the same value is obtained by a direct comparison of the barometric curves at the two stations.

For Albany, the Chamber of Commerce, New York city, and Rutgers College, New Jersey, all nearly on the same meridian, the mean difference for the time of maxima and minima is essentially zero.

College, the Chamber of Commerce, and the Deaf and Dumb Asylum, were compared. The following results were deduced:

	Twice the mean local disturbance. *in.*
Albany and Dartmouth College....................	±0.034
Albany and Chamber of Commerce, New York.....	±0.042
Albany and Deaf and Dumb Asylum,* New York..	±0.046
Chamber of Commerce and Deaf and Dumb Asylum,	±0.031

From these numbers we conclude that the local disturbance (viz., within a radius of one mile) may at any instant amount to ±$0^{in}.02$.

The simultaneous readings of two standard barometers at Albany, distant about one mile from each other, gave a still larger value for the local disturbance.

Hence we conclude, that barometric observations for height will always be affected by the local disturbance, which can only be eliminated by a long series of simultaneous records.

This conclusion is in accordance with that arrived at by Major R. S. Williamson, in his able Report on Barometric Hypsometry.

The foregoing barometric observations are reduced to 32° Fahr., but *not* to the level of the sea.

The height of the standard barometer above mean tide in the Hudson river, has not been precisely determined, but from levelings made by the city engineer, it is assumed to be 170 feet.

In the reduction of the automatic printed records, all the days in which more than six hours were incomplete, have been rejected entirely. They might have been interpolated from the readings of the standard barometer, made three times daily, but it was thought best to use actual records only.

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eaf and Dumb Asylum, New York city, were made with a standard

THE DIRECTION AND VELOCITY OF THE WIND,

FOR JANUARY, 1870.

DATE.	12 h.	13 h.	14 h.	15 h.	16 h.	17 h.	18 h.	19 h.	20 h.	21 h.	22 h.	23 h.
1............	NW 0	NW 0	NW 1	W 5	NW 6	NW 6	N 4	N 7	W 14	NW 12	NW 11	NW 8
2............	S 38	S 37	S 35	W 35	S 30	S 30	S 24	S 23	S 20	W 13	S 0	S 0
3............	S 2	S 3	SW 1	N 1	SW 1	N 1	SW 2	E 3	S 4	S 2	S 0	S 8
4............	SW 4	SW 3	SW 7	SW 6	SW 10	W 9	SW 6	SW 6	SW 4	SW 5	N 15	N 19
5............	S 9	S 6	S 15	S 18	S 20	S 22	S 27	S 27	S 20	S 17	S 19	S 23
6............	NW 5	NW 6	NW 18	NW 17	NW 19	NW 9	NW 12	N 5	N 9	NW 12	W 16	NW 13
7............	S 4	S 3	SE 2	S 7	S 7	SE 7	S 9	S 9	S 10	SE 10	S 8	S 10
8....	S 5	W 2	W 7	NW 10	SW 24	W 15	NW 15	NW 15	NW 18	NW 18	NW 20	NW 10
9............	S 20	S 17	S 21	S 18	S 18	S 17	S 15	S 18	S 17	SW 17	S 17	E 18
10............	S 14	S 8	S 8	S 9	S 7	W 6	NW 15	N 7	NW 5	NW 12	NW 8	W 7
11............	S 10	S 22	S 20	S 20	W 20	S 18	S 15	S 15	W 15	NE 13	S 22	S 22
12............	NW 2	NW 1	NE 5	NE 10	E 13	NE 8	NW 7	NE 9	NE 8	N 8	NE 8	E 5
13............	N 16	E 15	E 17	SE 16	SE 15	SE 16	E 12	E 11	E 12	NE 8	N 7	N 6
14............	N 1	W 1	N 2	NE 2	NE 3	NE 2	NE 5	NE 18	S 15	S 15	S 10	S 10
15............	S 1	S 0	N 0	NW 0	N 5	N 6	N 6	NE 15	NW 13	NW 15	W 15	S 11
16............	S 10	S 12	S 16	S 0	S 0	S 0	S 0	S 5	S 0	S 10	S 14	S 10
17............	S 10	W 10	W 10	S 10	S 10	S 10	SW 10	SW 10	SW 10	W 10	W 10	W 10

THE DIRECTION AND VELOCITY OF THE WIND,

FOR FEBRUARY, 1870.

DATE.	0 h.	1 h.	2 h.	3 h.	4 h.	5 h.	6 h.	7 h.	8 h.	9 h.	10 h.	11 h.
1	NW 24	NW 26	NW 20	NW 20	NW 23	NW 20	NW 10	NW 8	NW 2	N 3	N 3	N 2
2	S 22	S 23	S 20	S 13	S 11	S 10	S 5	S 10	SE 7	E 3	E 2	E 2
3	N 7	N 10	N 10	N 10	N 10	N 10	NE 10	NW 10	E 8	N 7	NW 7	SE 8
4	N 2	S 2	W 2	NW 2	SE 2	E 2	SW 1	SW 2	E 3	W 1	N 1	N 2
5	SW 4	SE 3	S 4	S 6	S 6	S 3	SE 2	SE 1	SE 1	SE 3	S 4	S 2
6	SE 3	SE 3	N 3	NE 4	NE 4	NE 1	NE 1	NE 1	NE 1	NE 1	NE 1	NE 1
7	NE 2	NW 2	N 2	NE 3	NE 1	NE 2	S 1	S 1	S 1	S 1	S 0	S 0
8	W 0	W 3	W 10	W 13	W 12	W 18	W 20	W 22	W 17	W 16	W 19	W 12
9	W 23	W 26	W 22	W 20	W 23	W 19	W 11	W 8	W 0	W 1	W 0	W 0
10	W 20	W 18	W 14	W 12	W 13	W 19	W 18	W 21	W 18	W 18	W 20	W 17
11	W 5	SE 9	SE 8	SE 8	SE 7	SE 6	SE 17	SE 22	SE 18	SE 30	S 29	SE 28
12	S 14	S 18	W 13	W 19	W 11	NW 15	W 17	W 14	W 18	W 16	W 13	W 15
13	N 17	W 17	W 13	W 12	W 13	NE 9	NE 5	NE 5	NE 6	NE 5	NE 2	NE 1
14	S 20	S 19	S 18	S 20	SE 20	S 20	SE 17	S 15	S 11	S 8	S 6	S 5
15	SW 14	S 12	S 8	S 11	NE 10	E 7	SE 10	NE 9	NE 10	N 10	NE 9	E 10
16	NW 7	W 3	SW 3	SW 4	W 6	N 2	SW 1	NW 3	SW 2	SW 2	S 3	NW 2
17	SE 20	S 28	S 30	S 30	S 28	S 20	S 17	SE 12	SE 10	S 10	S 12	S 13
18	S 17	S 12	S 8	S 8	S 11	S 18	SW 26	SW 22	SW 12	SW 13	SW 13	SW 14
19	W 9	W 10	W 8	W 10	W 10	W 6	W 2	W 2	W 1	W 1	W 1	W 2
20	SW 3	S 3	S 4	W 5	N 3	SE 18	SE 14	SE 21	SE 21	SE 13	SW 30	SW 24
21	W 26	W 25	W 29	SW 24	W 19	W 10	SW 7	SW 10	SW 10	SW 11	SW 10	W 10
22	SW 15	S 11	SW 19	SW 12	SW 10	SW 5	SW 2	SW 2	SW 3	S 4	S 10	S 10
23	S 13	S 11	S 16	S 14	SE 13	S 8	S 2	S 2	NW 3	NW 2	W 2	NW 2
24	SW 20	W 25	W 27	W 28	W 26	W 21	W 18	W 15	W 19	W 16	W 10	W 10
25	W 13	W 11	W 11	W 3	W 1	W 1	W 2	W 2	W 0	W 2	W 3	W 3
26	W 19	W 18	W 21	W 21	W 21	W 20	W 18	W 16	NW 8	N 3	N 2	NW 1
27	SW 1	SE 2	S 5	S 2	SE 1	W 2	SW 2	SW 2	SW 2	W 3	W 4	W 2
28	W 2	SE 2	SE 2	SE 2	S 3	S 4	SE 4	S 3	S 3	S 2	S 1	S 1

THE DIRECTION AND VELOCITY OF THE WIND,

For February, 1870.

Date.	12 h.	13 h.	14 h.	15 h.	16 h.	17 h.	18 h.	19 h.	20 h.	21 h.	22 h.	23 h.
1............	N 1	N 0	N 1	NE 0	NE 0	NE 0	SE 0	E 0	NE 0	NE 8	SE 15	S 18
2............	E 2	E 3	E 2	E 2	E 3	E 4	E 3	E 7	E 8	NE 8	N 7	N 7
3............	S 10	SE 8	E 9	NE 6	E 5	N 5	W 5	W 6	NW 6	NW 2	NW 2	SW 2
4............	NW 2	E 1	N 1	W 1	S 1	S 1	SW 1	N 1	NE 1	NE 2	SE 4	SW 3
5............	SE 1	S 1	S 1	S 1	S 1	S 2	W 3	W 1	W 2	W 2	SE 2	SE 2
6............	NE 1	N 1	N 1	N 1	N 1	N 1	N 1	N 2	N 1	NE 1	N 3	NE 1
7............	S 1	S 2	N 2	SE 3	E 2	E 2	E 2	E 1	E 0	W 2	W 3	W 0
8............	W 9	W 8	W 11	W 14	W 14	W 14	W 17	W 13	W 15	W 15	W 19	W 22
9............	W 3	W 2	W 3	W 2	W 2	W 2	W 2	W 4	W 4	W 4	W 14	W 16
10............	NW 7	W 9	W 10	NW 13	W 12	W 7	NW 8	NW 3	NW 5	SW 5	NW 3	SW 4
11............	S 28	S 30	S 25	S 21	S 21	SE 22	S 17	S 17	E 14	SE 11	S 14	SE 15
12............	W 21	W 19	W 10	W 12	SW 12	SW 15	SW 17	SW 22	SW 20	SW 15	E 20	W 22
13............	NE 3	NE 3	NE 2	NE 4	NE 3	NE 3	NE 0	NE 20	NE 27	S 20	S 20	S 20
14............	S 4	S 3	SE 3	S 2	SE 2	SE 2	S 2	E 2	E 8	NW 10	E 11	W 13
15............	SE 9	NE 9	S 12	E 12	S 11	S 12	SW 10	SE 10	W 10	SW 10	N 11	NW 10
16............	SW 2	SW 1	SW 2	SW 2	S 2	SW 2	S 2	SW 2	SW 2	S 3	S 5	S 11
17............	S 17	S 19	S 7	S 11	S 11	SW 3	S 8	S 19	S 23	S 18	S 19	S 12

THE DIRECTION AND VELOCITY OF THE WIND,

For March, 1870.

Date.	0 h.	1 h.	2 h.	3 h.	4 h.	5 h.	6 h.	7 h.	8 h.	9 h.	10 h.	11 h.
1	W 17	W 15	NW 15	W 8	W 12	W 10	W 6	W 8	W 4	W 2	W 3	W 2
2	W 26	W 29	W 33	W 28	W 25	W 23	W 22	W 21	W 20	NW 19	W 18	NW 17
3	W 16	W 17	W 16	W 15	W 15	E 10	NE 8	NE 8	NE 7	NE 2	NE 2	NE 2
4	NE 3	NE 2	NE 2	NE 2	NE 3	NE 2	NE 4	NE 4	NE 3	NE 3	NE 6	NE 7
5	NE 4	NE 5	NE 5	NE 5	NE 4	NE 4	NE 5	NE 4	NE 0	NE 0	NE 0	NE 0
6	NE 2	NE 1	NE 0	NE 0	NE 3	NE 3	NE 3	NE 4	NE 4	NE 4	NE 3	NE 3
7	NE 3	NE 3	NE 4	NE 4	NE 4	NE 5	NE 4	NE 3	NE 2	NE 1	NE 1	NE 0
8	S 2	S 3	SW 6	SW 5	S 7	W 10	SW 9	S 13	W 13	W 15	W 19	W 20
9	W 23	W 21	W 22	W 22	W 21	W 18	W 12	W 0	W 0	W 0	W 0	W 2
10	E 2	E 2	SE 2	SE 3	SE 3	W 4	W 4	W 4	W 3	W 3	W 4	W 5
11	W 3	W 1	SW 1	SW 1	SW 2	S 3	SW 4	W 2	W 1	W 3	N 3	SW 5
12	W 2	S 3	SW 1	W 1	N 1	N 1	N 1	N 1	N 1	N 1	N 3	N 2
13	N 10	NW 10	N 11	N 15	N 10	NW 9	NW 8	NW 4	NW 3	NW 6	NW 8	NW 7
14	N 5	N 4	N 4	N 3	NW 4	N 7	N 6	N 4	N 2	N 2	N 3	N 2
15	N 5	N 5	N 2	N 2	N 2	N 4	N 2	N 4	N 3	N 2	N 2	N 2
16	E 50	E 50	E 50	E 46	E 30	E 10	N 13	W 15	W 15	W 14	W 10	W 10
17	N 3	N 5	N 6	N 6	N 8	N 15	N 12	N 17	N 18	NW 17	NW 18	NW 13
18	N 12	N 11	N 11	N 10	N 10	N 10	N 12	N 9	N 10	N 5	N 3	N 3
19	N 3	N 4	N 2	N 1	N 0	N 0	N 1	N 1	N 1	N 1	N 1	N 1
20	W 9	S 5	S 5	S 4	S 3	S 3	S 3	S 5	S 4	S 5	S 7	S 6
21	SW 10	SW 10	W 4	W 9	W 9	W 4	N 5	W 4	N 3	NE 4	N 4	N 5
22	W 10	N 4	N 5	N 6	S 11	W 13	W 11	W 17	W 15	W 13	W 16	W 16
23	W 30	W 30	W 31	W 28	W 25	W 25	N 20	N 15	N 13	W 12	W 15	W 17
24	W 25	W 25	W 25	W 26	S 25	W 28	S 25	W 21	W 22	W 23	W 20	W 11
25	NE 8	NE 10	NE 11	NE 11	NE 6	NE 7	NE 10	NE 11	NE 6	NE 6	NE 5	NE 3
26	SW 6	S 4	S 5	S 5	S 4	S 7	SE 10	SE 12	S 11	SE 10	SE 13	SE 10
27	NE 11	SE 15	E 14	E 12	E 6	E 5	E 8	E 10	E 10	E 8	E 10	E 5
28	SE 2	N 3	N 7	N 8	NE 9	NE 5	E 5	NE 5	NE 4	N 3	N 4	N 3
29	N 4	N 4	NW 4	N 5	NE 3	N 8	N 8	N 8	N 6	N 5	N 8	N 10
30	N 5	N 4	N 3	NE 3	N 3	N 3	N 3	N 1	W 1	W 1	W 2	W 1
31	E 10	E 5	N 5	SW 5	W 4	NW 3	N 4	NE 2	NE 0	SE 0	W 0	W 0

THE DIRECTION AND VELOCITY OF THE WIND,

FOR MARCH, 1870.

DATE.	12 h.	13 h.	14 h.	15 h.	16 h.	17 h.	18 h.	19 h.	20 h.	21 h.	22 h.	23 h.
1…………	W 3	W 3	W 2	W 2	W 10	W 10	W 12	W 10	NW 13	W 13	W 21	W 20
2…………	NW 16	W 15	W 16	W 17	NW 18	NW 19	W 20	W 19	W 18	NW 17	SW 16	W 15
3…………	NE 1	NE 1	NE 1	NE 1	NE 1	NE 1	NE 1	E 1	NE 1	N 2	NE 5	NE 3
4…………	NE 8	NE 8	NE 5	NE 6	NE 3	NE 2	NE 3	NE 7	NE 2	NE 7	NE 5	NE 6
5…………	NE 0	NE 4	NE 2	NE 0	NE 3	NE 0	NE 2	NE 2	NE 3	NE 3	NE 3	NE 3
6…………	NE 4	NE 4	NE 3	NE 3	NE 4	NE 3	NE 4	NE 4	NE 2	NE 3	NE 4	NE 3
7…………	NE 1	NE 0	NE 0	NE 1	NE 1	NE 0	NE 0	NE 0	NE 1	E 0	N 0	SE 1
8…………	W 14	W 12	W 10	W 10	W 10	W 6	W 0	W 3	S 11	W 14	W 13	W 19
9…………	W 3	NW 11	W 11	W 10	W 8	W 9	W 5	W 2	W 3	W 3	NW 1	NE 2
10…………	W 5	NW 3	NW 4	N 4	N 3	N 4	N 4	N 5	N 5	NE 5	W 3	W 2
11…………	N 6	NW 8	NW 7	N 4	N 5	N 4	N 1	NW 2	W 3	NW 3	W 2	SW 2
12…………	N 2	N 2	N 2	N 2	N 2	N 2	N 2	N 3	N 12	NE 10	W 16	W 11
13…………	NW 5	NW 4	NW 4	N 7	N 6	N 8	N 7	NW 7	NW 6	N 7	N 8	NW 6
14…………	NW 3	N 3	NW 2	N 2	N 1	N 1	N 2	N 1	N 2	N 2	N 3	N 5
15…………	N 2	N 2	N 2	N 3	E 6	E 14	E 23	E 30	NE 33	E 36	E 12	S 13
16…………	W 10	W 15	W 14	W 15	W 17	W 12	W 13	W 10	W 8	N 4	N 2	N 3
17…………	NW	NW	NW	NW	NW	NW	NW	N	N	N	N	N

THE DIRECTION AND VELOCITY OF THE WIND,

FOR APRIL, 1870.

DATE.	0 h.	1 h.	2 h.	3 h.	4 h.	5 h.	6 h.	7 h.	8 h.	9 h.	10 h.	11 h.
1............	NW 5	N 14	E 17	E 16	E 15	E 11	NE 8	NE 10	N 8	NE 2	N 2	NE 4
2............	E 10	E 5	N 8	NE 8	N 9	N 8	N 4	N 3	N 6	NE 3	NE 3	NE 3
3............	NE 20	NE 20	N 20	NE 22	N 25	NE 23	NE 23	NE 25	NE 17	NE 22	NE 20	N 13
4............	N 19	N 18	N 18	N 21	NE 22	NE 16	NE 20	NE 21	NE 21	NE 25	NE 24	N 25
5............	NE 9	NE 11	E 8	E 13	E 11	E 11	SE 10	E 8	E 9	E 7	E 7	NE 6
6............	N 6	N 11	N 10	N 7	N 9	N 10	W 4	N 2	N 1	N 1	NE 3	NE 1
7............	N 4	E 3	N 8	W 10	W 8	W 7	W 6	NW 8	W 8	NW 7	N 0	N 2
8............	W 7	NW 8	NW 11	W 10	W 9	W 9	NW 7	W 4	N 5	W 2	NW 1	NW 0
9............	N 4	N 8	N 8	N 7	N 7	N 5	N 1	N 1	N 1	N 1	N 2	N 6
10............	N 4	N 4	N 4	N 3	N 9	N 10	N 5	N 6	N 6	N 4	N 3	N 3
11............	N 10	N 13	N 13	N 11	N 7	N 5	N 5	N 7	N 6	N 7	N 9	N 9
12............	N 10	N 20	N 19	S 28	SW 28	W 25	W 20	W 17	SW 14	W 14	W 13	W 14
13............	E 10	NE 5	NE 5	NW 7	NW 8	W 8	NW 5	N 1	SE 1	SE 0	SE 3	SE 3
14............	S 11	W 11	S 8	S 5	SW 4	SW 4	SW 5	SW 5	S 5	S 4	S 2	SW 2
15............	N 9	N 7	N 5	E 9	E 19	SE 14	S 11	S 12	S 15	S 14	S 12	S 13
16............	SE 23	SE 23	S 23	SE 23	SE 24	SE 26	SE 24	SE 25	S 23	SE 24	SE 26	S 26
17............	SE 17	SE 17	SE 19	S 20	S 15	SE 8	SW 2	SW 5	SW 6	SW 5	SW 7	W 8
18............	E 24	NE 25	E 27	E 20	E 18	E 29	E 22	NE 13	E 5	NE 16	NE 14	E 2
19............	S 8	SW 9	S 3	W 1	SW 2	S 1	E 9	E 5	E 6	NE 6	E 4	E 2
20............	SE 4	SE 6	SE 4	E 4	NE 6	NE 4	NE 4	NE 4	NE 4	NE 4	NE 2	NE 1
21............	S 7	S 6	NW 2	NE 7	NE 7	W 9	N 10	NE 8	NE 4	NW 5	NW 5	NW 2
22............	N 2	NE 4	E 0	N 0	N 0	N 0	N 0	N 1	N 1	N 1	N 1	N 1
23............	SW 20	S 18	S 15	S 13	SE 13	S 15	S 13	S 13	SE 14	S 16	S 15	S 13
24............	S 9	S 10	S 4	W 10	N 8	N 2	NW 2	SW 8	NE 11	N 13	N 18	NE 9
25............	NE 7	NE 9	N 9	NE 12	N 15	N 16	W 11	W 14	W 10	NW 10	W 12	W 8
26............	SW 13	SW 18	SW 25	SW 25	SW 21	SW 16	SW 9	SW 3	SW 3	SW 1	SW 1	SW 3
27............	S 11	S 13	S 14	S 12	S 13	S 11	S 10	S 10	S 12	SE 13	S 12	S 11
28............	SW 10	SW 10	W 13	W 14	NW 11	NW 2	W 2	NW 0	NW 0	NW 10	W 8	W 16
29............	NE 0	E 0	E 5	E 4	E 1	NE 2	NE 3	E 1	NE 2	NE 7	NW 9	NW 4
30............	S 0	NE 0	W 0	NE 1	W 2	N 3	N 4	N 5	N 6	N 7	N 8	N 9

THE DIRECTION AND VELOCITY OF THE WIND,

FOR APRIL, 1870.

DATE.	12 h.	13 h.	14 h.	15 h.	16 h.	17 h.	18 h.	19 h.	20 h.	21 h.	22 h.	23 h.
1	N 1	N 2	NE 1	N 3	NW 1	NE 2	N 1	N 1	E 1	N 3	SW 3	N 8
2	NW 1	N 8	NW 9	N 14	NE 20	NE 18	NE 15	E 22	NE 23	NE 21	NE 22	NE 22
3	N 14	N 19	N 18	N 18	N 22	N 18	N 21	N 21	N 20	N 16	NE 23	NE 21
4	N 21	N 20	N 20	N 21	N 16	N 17	N 15	N 10	N 6	N 3	NE 5	NE 7
5	NE 5	NE 5	NE 9	NE 10	NE 9	NE 6	NE 2	NE 3	NE 6	NE 5	N 8	NW 9
6	NE 1	NE 1	W 3	W 0	NW 0	W 0	W 0	NW 0	N 4	NE 5	NE 3	E 3
7	N 0	N 0	N 0	N 1	N 2	S 2	S 2	S 3	S 3	SE 3	NW 12	W 10
8	NW 1	N 1	N 0	N 0	NE 0	NE 0	E 0	SE 2	NE 3	S 2	N 2	N 4
9	N 2	N 2	N 1	N 1	N 1	N 1	N 1	N 2	N 1	N 2	N 2	N 2
10	N 5	N 5	N 2	N 3	N 1	N 1	N 3	N 1	N 2	N 3	N 2	N 2
11	N 9	N 11	N 5	N 8	N 6	N 5	N 7	N 6	N 11	N 10	W 9	N 11
12	W 12	W 8	N 6	N 8	N 3	N 5	NE 8	N 11	N 8	SE 10	NE 11	NE 12
13	SE 3	SE 2	SE 3	SE 2	SE 2	SE 2	SE 3	SE 10	SE 13	S 13	S 10	SW 12
14	W 6	W 2	W 2	W 2	N 3	N 2	N 5	N 11	NE 8	N 15	NE 11	N 11
15	S 11	S 14	S 12	S 16	S 18	S 18	S 17	S 17	S 18	S 23	SE 20	SE 20
16	SE 18	SE 19	SE 11	SE 10	S 11	S 3	S 5	S 6	S 2	S 2	SE 5	S 12
17	W 9	SW 12	E 8	S 8	SE 7	NE 8	W 8	W 14	E 23	E 23	E 16	E 22
18	W 4	NE 4	NE 2	E 7	NE 8	NE 9	NE 4	NE 5	NE 3	S 11	S 15	S 10
19	NE 2	NE 2	S 2	S 2	S 4	S 3	S 6	SW 8	S 11	S 8	SW 7	S 6
20	NE 1	NE 1	NE 1	N 1	NE 0	NE 1	NE 1	NE 3	E 5	SE 10	SW 10	S 7
21	NW 1	W 1	W 1	N 9	NW 8	NW 6	NW 6	W 6	NW 7	N 3	SE 5	NE 4
22	N 1	N 1	N 0	N 0	N 1	N 1	N 0	NE 1	NE 1	N 1	SW 13	S 19
23	S 10	S 12	S 12	S 10	S 4	S 2	S 0	S 11	S 10	S 10	S 10	S 11
24	N 2	N 1	N 0	N 0	NE 2	NE 8	NE 0	NW 0	NE 2	NE 4	W 7	N 6
25	NW 4	NW 1	W 1	NW 1	NW 1	NW 1	N 1	S 1	S 8	W 12	W 14	NW 13
26	SW 2	S 3	S 1	SW 1	SW 1	S 4	S 1	S 1	S 9	S 5	S 7	S 10
27	S 11	S 10	S 11	S 11	S 12	S 16	S 17	S 18	S 15	W 14	W 20	SW 12
28	NW 17	W 14	W 14	NW 10	W 10	W 1	NW 0	NW 2	N 0	N 2	N 3	NW 4
29	W 8	W 6	W 2	NW 2	NW 0	N 1	NW 1	NE 1	E 1	N 2	SW 7	E 0
30	N 10	N 11	N 12	NW 13	NW 14	NW 16	NW 18	NW 20	NW 20	NW 20	NW 20	NW 20

THE DIRECTION AND VELOCITY OF THE WIND,

FOR MAY, 1870.

DATE.	0 h.	1 h.	2 h.	3 h.	4 h.	5 h.	6 h.	7 h.	8 h.	9 h.	10 h.	11 h.
1............	NW 25	NW 27	NW 28	NW 30	N 20	N 10	N 5	N 5	N 5	N 5	N 5	N 5
2............	E 8	E 7	E 5	E 4	E 3	S 5	S 4	S 5	S 3	S 5	S 4	S 5
3............	S 17	S 18	NE 20	SW 24	E 21	SE 21	S 18	SW 19	SW 19	SW 13	S 11	SW 10
4............	NW 16	NW 19	W 24	SE 22	SW 19	E 20	NE 25	E 27	E 24	NE 17	NE 8	N 7
5............	E 3	SW 6	E 3	SE 4	E 7	N 8	NE 5	NE 11	NE 9	E 5	SW 5	NE 5
6............	S 3	S 8	S 9	S 9	S 10	S 10	SW 5	SW 4	W 8	NE 7	NE 5	SW 2
7............	N 3	N 8	NE 5	N 7	W 3	NW 5	NE 2	N 2	N 2	NW 2	NE 1	N 1
8....	N 3	N 4	NW 5	NW 6	SW 6	NW 5	N 5	E 1	E 2	E 4	SE 3	SE 1
9............	SE 8	S 9	S 9	SE 9	S 9	S 9	S 9	S 8	S 9	S 11	S 7	S 8
10............	S 12	S 11	SE 9	SE 9	SE 10	S 10	S 9	S 9	S 10	S 9	SE 9	SE 9
11....	S 6	SE 2	SW 2	NE 3	NE 3	N 3	NE 2	N 3	N 4	N 4	N 5	N 6
12............	W 8	S 9	NE 10	SW 10	SW 10	W 5	S 3	S 3	S 6	SW 5	W 5	W 3
13............	W 4	SW 2	W 3	E 7	W 1	W 4	SW 10	NE 7	SW 7	W 7	W 6	W 7
14............	NE 4	E 5	SE 4	E 2	SE 3	S 3	W 6	SW 13	SW 14	SW 10	NE 5	NE 2
15............	W 13	W 18	SW 19	SW 18	SW 16	SW 10	SW 2	W 2	W 2	SW 0	SW 2	SW 1
16............	S 2	S 9	SW 9	W 11	SW 12	SW 14	SW 15	NE 15	N 13	NW 6	W 5	NW 4
17............	SW 2	W 2	N 2	W 2	S 4	SW 3	W 2	W 2	SW 3	S 3	S 3	S 3
18............	SW 15	S 17	SW 17	SW 20	S 20	S 21	S 19	S 16	S 17	S 14	S 13	S 13
19............	SW 20	S 20	S 20	S 23	S 23	S 18	S 17	S 13	S 6	S 10	S 8	S 11
20............	SW 8	SW 12	SW 16	SW 15	SW 17	SW 14	SW 11	SW 8	SW 7	N 5	N 3	W 4
21............	SW 2	NE 13	NE 13	N 9	W 8	N 11	N 12	N 7	W 8	W 6	N 3	NW 3
22............	NW 10	NW 5	NW 3	N 3	N 12	N 11	NW 7	W 10	NW 8	NW 2	W 5	W 1
23............	SW 14	SW 18	SW 13	SW 15	S 17	S 13	S 9	SE 10	S 11	S 11	S 12	S 10
24............	S 10	S 10	S 11	S 7	S 10	S 13	S 14	S 14	S 13	S 13	SW 8	SW 6
25....	W 13	SW 12	NW 14	NW 13	W 13	W 12	W 11	SW 9	SW 5	SW 8	W 8	W 3
26............	SW 12	N 11	NE 14	NE 10	NE 9	N 12	NE 13	NE 14	N 10	N 12	N 9	N 7
27............	NE 14	E 16	E 16	E 18	SE 19	E 17	E 13	SE 13	E 14	E 10	E 3	NE 3
28.	NE 11	N 16	E 18	NE 9	E 9	E 2	E 2	E 0	E 1	E 1	E 0	E 1
29............	S 7	SE 5	SE 5	S 6	S 4	SE 2	SE 2	S 1	S 2	S 2	SE 2	SE 8
30......... ...	S 10	S 10	SW 10	SW 12	S 15	S 11	S 12	S 11	S 10	S 11	S 7	S 4
31............	S 11	S 11	S 13	S 10	SW 12	S 10	S 6	S 4	S 5	S 4	S 5	S 4

THE DIRECTION AND VELOCITY OF THE WIND,

FOR MAY, 1870.

DATE.	12 h.	13 h.	14 h.	15 h.	16 h.	17 h.	18 h.	19 h.	20 h.	21 h.	22 h.	23 h.
1............	N 1	NW 2	NW 2	NW 1	NW 1	NW 1	NW 1	NW 2	NW 2	NW 1	E 8	E 9
2............	S 9	S 10	S 12	S 11	S 13	S 14	S 13	S 17	S 13	S 13	S 19	SE 20
3............	S 9	SW 10	SW 10	SW 10	S 7	SW 4	SW 6	NE 10	NE 7	SE 7	NE 11	SE 14
4............	NW 9	NW 8	NW 7	N 6	NE 4	NE 2	NE 2	N 2	N 5	NE 3	NW 4	SE 2
5............	SW 4	E 2	W 0	NW 1	W 1	W 3	N 0	NE 2	S 8	S 3	S 5	S 2
6............	SW 2	W 3	W 4	N 3	NW 3	NE 2	SW 1	SW 1	N 2	N 3	SE 3	SE 3
7............	NE 2	N 1	N 1	N 1	N 3	N 1	N 2	N 1	N 1	N 2	N 2	NE 2
8............	SE 5	SE 8	SE 2	SE 1	SE 0	SE 0	SE 1	SE 0	SE 0	SE 2	SE 2	SE 3
9............	S 8	S 10	S 10	S 10	S 10	S 10	S 12	S 12	SE 12	SE 10	SE 11	S 10
10............	SE 10	SE 11	SE 8	S 10	SE 10	S 8	S 4	S 3	S 5	S 3	S 3	S 6
11............	N 5	N 7	N 8	N 8	N 8	N 8	N 7	N 7	N 6	N 7	E 5	SW 7
12............	W 3	W 2	W 6	W 3	W 4	W 4	W 2	W 3	W 7	W 10	W 3	W 4
13............	W 2	W 5	NE 1	NE 2	W 2	NW 1	W 2	SE 5	NE 3	NE 2	W 2	SE 2
14............	NE 3	S 1	S 1	SE 1	SE 1	E 2	S 1	SW 1	S 4	W 10	W 14	W 13
15............	SW 3	SW 3	SW 3	SW 2	SW 3	S 2	S 2	S 3	S 2	S 1	SW 5	SE 6
16............	SW 6	NW 5	SW 3	NW 3	NW 3	NW 4	W 2	NW 1	NW 1	NE 1	N 2	N 2
17............	S	SE	SE	SE	SE	SE	SE	W	SW	SW	SW	SW

THE DIRECTION AND VELOCITY OF THE WIND,

FOR JUNE, 1870.

DATE.	0 h.	1 h.	2 h.	3 h.	4 h.	5 h.	6 h.	7 h.	8 h.	9 h.	10 h.	11 h.
1.	S 8	SW 7	SW 8	SW 6	E 5	SE 10	S 15	S 15	S 12	S 10	S 11	S 9
2.	SW 10	SW 13	SW 16	SW 13	W 14	W 10	SW 7	SW 6	SW 10	SW 13	SW 11	SW 10
3.	SE 12	SW 8	SW 12	SW 14	SW 13	SW 14	SW 11	SW 11	SW 7	SW 8	SW 6	SW 10
4.	SW 4	SW 4	S 6	S 8	SW 9	SW 10	SW 9	SE 6	SW 8	SW 10	SW 15	SW 11
5.	SW 15	SW 15	SW 20	SW 18	SW 18	SW 15	SW 15	SW 10	SW 9	SW 10	SW 13	SW 17
6.	SW 14	SW 14	SW 17	SW 18	SW 14	SW 13	SW 10	SW 4	SW 1	SW 1	SW 1	SW 1
7.	S 3	S 1	S 2	S 2	S 2	E 3	E 5	E 2	E 3	E 2	E 2	NW 2
8.	NW 7	NE 5	E 4	NW 11	NE 8	E 5	NE 5	NW 3	N 3	N 2	NE 2	NW 2
9.	S 18	S 24	S 34	S 40	SE 45	SE 41	S 26	S 30	SE 34	S 35	SE 45	SE 29
10.	SE 20	SE 21	S 21	S 22	S 19	SW 15	SE 13	SE 12	S 10	S 8	SW 8	S 3
11.	E 1	E 1	E 0	SE 0	S 0	S 5	SE 13	S 11	S 13	S 10	SE 9	S 9
12.	S 14	S 15	S 13	S 16	S 17	S 14	SE 10	S 10	S 9	S 10	S 10	S 8
13.	W 3	SE 9	SE 18	S 16	S 18	SE 18	S 19	SE 18	S 14	S 10	S 14	S 14
14.	S 16	S 16	S 5	SW 6	S 5	E 4	NE 2	SE 1	SE 8	S 5	S 5	S 5
15.	S 16	S 18	S 19	S 23	S 22	S 18	S 14	S 4	S 10	S 11	S 8	S 3
16.	S 4	SW 4	S 5	SW 3	S 4	S 8	S 9	W 4	W 3	SW 3	W 3	S 3
17.	S 8	SE 2	S 2	S 2	SW 2	S 2	NW 1	E 0	N 2	NW 0	NW 0	NW 0
18.	S 10	S 10	S 8	S 4	NW 9	W 10	W 5	NW 2	W 3	NW 2	NW 2	N 1
19.	S 7	S 11	S 13	S 14	S 12	S 10	S 7	S 3	S 3	S 4	S 8	S 11
20.	N 3	S 6	SE 5	S 8	S 8	SW 8	S 7	W 7	SW 7	SW 2	N 1	NW 5
21.	NW 15	W 14	N 15	N 15	N 13	N 13	NW 7	W 12	N 9	S 4	NW 3	NW 4
22.	W 16	W 16	W 18	W 17	W 16	W 15	W 13	W 10	W 9	NW 7	W 4	W 0
23.	W 12	W 16	W 18	W 14	W 15	W 21	NW 17	NW 15	W 8	NW 5	NW 3	N 4
24.	SW 8	W 9	W 5	W 5	W 9	W 8	W 7	W 9	W 2	W 2	W 2	NW 2
25.	NW 2	SW 8	SW 7	SW 9	W 12	NW 13	NW 11	NW 10	SW 8	SW 5	NE 3	N 3
26.	N 6	NW 10	SE 10	SE 10	S 12	SW 14	SW 15	SW 15	SW 15	SW 12	SW 12	SW 13
27.	SW 11	SW 10	SW 11	SW 12	SW 9	NW 9	SW 8	SW 18	SW 14	S 10	SW 10	S 3
28.	N 2	N 8	E 7	SE 5	W 5	N 5	E 5	S 4	W 2	SW 2	NW 7	N 6
29.	SE 9	NE 8	NE 7	E 4	E 3	SE 1	SE 0	E 0	E 5	E 6	E 2	N 3
30.	SW 7	SW 9	SW 10	S 10	S 5	SW 4	SE 5	S 2	SW 7	N 6	NW 8	NW 10

[illegible] THE WIND.

[illegible]

[illegible]	[illegible]
[illegible]	SW 10
[illegible]	S
[illegible]	SW 5
[illegible]	S 11
[illegible]	SW 15
[illegible]	W 9
[illegible]	NW 6
[illegible]	S 6
[illegible]	S 19
[illegible]	N 8
[illegible]	SW 14
[illegible]	W 0
[illegible]	S 13
[illegible]	S 14
[illegible]	SE 6
[illegible]	W 5
[illegible]	S 8
[illegible]	SE

THE DIRECTION AND VELOCITY OF THE WIND,

For July, 1870.

Date.	0 h.	1 h.	2 h.	3 h.	4 h.	5 h.	6 h.	7 h.	8 h.	9 h.	10 h.	11 h.
1	NE 6	N 5	NE 7	N 5	N 4	SW 6	W 6	W 6	N 6	W 5	W 5	W 3
2	SE 4	S 4	SW 5	S 3	S 6	S 3	S 3	SE 2	SE 4	SE 7	S 8	S 8
3	S 4	N 8	SE 7	S 7	S 6	SW 5	S 3	S 2	S 2	S 4	SW 2	S 2
4	S 7	S 8	S 9	S 9	S 12	S 13	SW 12	S 12	SE 15	S 16	S 14	S 16
5	S 15	S 16	S 15	S 14	S 12	S 10	S 10	S 13	S 10	S 9	S 7	S 6
6	E 4	NW 3	SW 6	E 5	NE 3	NE 2	E 13	S 13	SE 16	S 12	SE 12	S 13
7	S 30	S 29	S 27	S 26	S 20	S 19	S 17	S 18	S 20	S 15	S 16	NE 10
8	SW 9	W 11	W 13	W 11	W 11	W 7	W 7	W 2	W 2	W 1	W 1	W 3
9	W 11	W 10	W 9	W 8	W 7	W 5	W 2	W 1	W 2	SW 4	S 5	S 5
10	S 9	S 11	S 14	S 10	SE 6	SW 3	SW 3	SW 2	SW 3	S 2	S 0	S 1
11	S 10	S 12	S 12	S 12	SW 15	S 12	SE 9	S 6	S 10	S 15	S 17	S 17
12	SW 1	SW 1	SW 7	SW 5	SW 6	SW 7	S 5	S 5	S 7	S 1	S 7	W 2
13	S 1	SW 3	SW 6	SW 5	SW 6	S 5	SE 6	S 9	S 8	S 7	S 5	S 6
14	S 17	S 9	NE 3	W 10	N 11	W 13	S 9	S 2	SW 2	S 1	S 2	SW 1
15	W 3	N 3	N 3	W 3	SW 3	S 2	W 3	S 1	W 0	W 0	SW 0	SW 0
16	SE 7	S 8	SE 10	S 10	SW 13	S 7	S 10	S 12	S 11	S 10	SE 7	S 7
17	NW 10	W 12	W 12	W 17	SW 11	W 13	NW 15	W 12	NE 11	NW 3	NE 3	N 3
18	W 3	N 2	N 2	N 6	N 5	NW 9	NW 5	NW 1	NW 1	NW 2	NW 2	NW 1
19	N 3	N 3	NE 1	N 3	N 3	W 2	N 8	NE 9	SE 7	S 6	S 4	S 4
20	S 17	S 20	S 15	SW 20	S 20	S 19	S 17	W 4	E 10	S 14	S 16	S 15
21	W 9	NW 9	NW 11	NW 15	W 14	SE 14	W 12	W 7	NW 2	NW 2	W 7	W 3
22	S 4	S 10	S 13	S 17	S 18	S 18	S 17	S 14	S 13	S 13	S 17	S 16
23	SE 10	SE 10	S 6	S 6	SE 7	S 5	S 3	S 7	S 6	S 3	SW 6	S 8
24	SE 18	S 23	S 23	S 24	S 24	S 11	SW 10	SW 10	S 5	W 4	W 2	W 3
25	W 8	W 11	W 10	W 10	W 10	W 10	NW 8	W 8	W 8	W 1	W 1	W 2
26	SW 2	W 8	W 8	NW 4	NW 6	NW 4	N 5	NE 4	NE 4	N 0	N 0	N 0
27	NE 2	W 11	S 10	S 6	S 9	S 15	S 13	S 11	S 10	S 13	S 13	S 13
28	S 15	S 18	S 20	S 23	S 24	S 17	S 16	S 12	S 19	S 16	S 20	S 23
29	S 17	W 10	NW 5	NW 4	W 8	W 10	NW 7	W 5	W 3	W 4	NW 3	W 2
30	NW 13	W 13	W 14	W 11	W 10	W 10	W 9	W 9	W 7	SW 8	W 5	N 2
31	SW 3	W 4	W 3	E 3	W 4	NW 4	NW 3	NW 2	NW 1	NW 1	NW 1	NW 0

0 h=Noon. 12 h=Midnight.

THE DIRECTION AND VELOCITY OF THE WIND,

For July, 1870.

Date.	12 h.	13 h.	14 h.	15 h.	16 h.	17 h.	18 h.	19 h.	20 h.	21 h.	22 h.	23 h.
1.	W	W	SW	SW	W	N	N	N	N	NE	W	SE
	3	3	3	3	8	2	2	2	4	1	5	4
2.	S	S	S	SE	SE	SW	SW	SW	SW	SW	SW	SW
	9	7	5	2	4	0	0	1	2	3	2	2
3.	S	S	S	S	SE	SE	SE	SE	S	S	S	S
	2	2	2	2	2	1	0	2	3	6	7	6
4.	S	S	S	S	SW	SW	S	S	S	S	S	S
	16	12	10	8	6	10	14	17	15	14	16	14
5.	S	S	S	S	S	S	S	S	SE	E	N	SE
	8	8	7	7	4	4	3	7	3	2	2	3
6.	SE	S	S	S	S	S	S	S	S	S	S	S
	14	16	19	16	16	12	16	22	22	21	23	27
7.	SW	S	S	S	S	S	S	S	S	S	S	S
	4	6	6	8	7	8	6	10	12	11	14	12
8.	W	W	W	W	W	W	W	W	W	W	N	W
	2	2	1	1	2	1	1	5	2	9	9	10
9.	S	S	S	S	S	S	S	S	S	S	S	S
	6	5	4	3	6	6	8	9	8	8	6	7
10.	S	SE	SE	SE	S	S	SE	S	S	SE	S	S
	1	2	1	2	1	0	1	2	1	1	6	6
11.	S	SE	S	S	SE	S	S	S	S	S	SW	SW
	16	12	16	12	9	5	9	10	1	1	1	1
12.	N	NE	N	N	W	W	W	W	W	W	S	S
	1	2	1	1	4	5	2	3	2	2	3	7
13.	S	S	S	S	S	S	S	S	S	S	S	S
	5	5	2	2	2	1	10	14	11	11	12	10
14.	SW	S	S	SW	SE	SW	SW	SE	SE	S	SW	W
	3	7	7	4	3	1	1	3	3	3	3	3
15.	W	W	W	W	W	W	W	W	W	E	E	SE
	0	0	0	0	0	0	0	0	0	3	2	3
16.	S	N	SW	S	S	S	E	S	SW	SW	NW	W
	3	6	5	8	8	8	6	6	4	3	6	8
17.	NE	NW	SE	W	W	W	W	W	W	W	S	SW
	5	1	1	1	1	1	1	1	1	1	1	2
18.	NW	NW	NW	NW	NW	NW	NW	N	N	NE	E	N
	1	1	1	1	2	2	3	4	5	4	1	1
19.	S	S	S	S	S	S	S	SE	SE	SE	S	S
	6	3	4	4	3	3	4	6	5	7	16	18
20.	S	S	S	S	S	W	S	SW	W	W	NE	W
	15	14	12	10	5	2	4	4	6	7	8	10
21.	NW	N	N	N	N	N	N	N	N	N	NE	SE
	3	3	4	4	3	2	1	1	1	2	2	4
22.	S	S	S	S	S	S	S	S	SE	S	SW	N
	15	13	12	11	11	12	17	16	11	8	7	3
23.	S	S	S	S	S	S	S	S	S	S	S	S
	8	7	9	10	10	11	11	13	11	11	15	18
24.	SW	SW	SW	W	W	W	SW	SW	W	SW	W	W
	3	2	1	4	3	3	2	4	7	2	8	8
25.	W	W	W	W	W	W	W	N	N	NW	NW	SW
	1	1	1	1	0	0	2	3	5	4	3	2
26.	N	NE	NE	NW	W	S	S	S	W	SE	N	N
	2	2	1	2	1	1	3	2	1	3	2	2
27.	E	S	S	S	S	S	S	S	S	E	S	S
	12	11	10	10	9	10	13	15	15	14	13	13
28.	S	S	S	S	S	S	S	S	S	S	S	S
	20	17	13	12	10	4	3	2	2	9	10	12
29.	W	SE	E	S	S	S	S	S	S	S	W	W
	3	2	2	2	4	4	6	8	12	13	10	12
30.	N	N	N	N	N	N	NW	W	S	SW	SE	S
	0	0	0	0	0	0	0	1	2	2	5	3
31.	NW	NW	W	W	NW	S	S	S	S	S	SE	NW
	0	0	0	0	1	1	10	12	9	6	3	3

THE DIRECTION AND VELOCITY OF THE WIND,

FOR AUGUST, 1870.

DATE.	0 h.	1 h.	2 h.	3 h.	4 h.	5 h.	6 h.	7 h.	8 h.	9 h.	10 h.	11 h.
1............	SW 4	NW 3	NW 3	NW 3	N 5	N 5	N 5	N 1	N 1	N 1	N 1	N 3
2............	W 7	W 9	W 11	W 10	W 10	W 10	W 7	W 7	W 7	W 4	W 3	W 1
3............	SW 3	SW 5	SW 6	S 2	NE 8	E 1	E 1	E 9	S 14	S 12	S 9	S 3
4............	W 3	W 7	W 2	W 4	S 9	SE 10	S 10	S 2	W 6	W 4	SW 4	SW 2
5............	S 7	W 15	NW 14	W 12	W 10	W 7	W 4	NW 2	W 1	W 1	W 0	W 2
6............	E 7	SE 3	SE 3	SE 7	SW 9	SE 8	SE 4	SE 4	S 8	S 9	S 11	S 11
7............	S 9	S 12	S 10	S 13	S 15	SW 16	S 15	S 10	S 13	S 15	S 14	S 14
8............	S 26	S 28	S 30	S 29	S 27	S 22	S 18	S 14	S 15	S 18	S 20	S 18
9............	S 13	S 13	W 30	NE 15	SE 4	NW 5	N 4	SW 6	NW 1	S 10	SE 10	SE 2
10............	S 1	S 1	S 2	S 2	S 2	S 1	S 1	S 0	S 2	S 1	S 1	S 1
11............	E 1	NE 1	NE 1	E 0	E 2	N 2	NW 1	NW 1	NE 1	SW 1	NE 3	SE 2
12............	NW 14	NE 13	W 7	W 10	W 9	W 16	W 7	NW 1	SE 0	SW 0	N 0	N 0
13............	NW 7	S 7	SW 7	W 8	NW 9	SE 14	W 10	N 10	N 8	N 4	N 4	N 2
14............	N 3	W 3	SW 3	W 7	W 4	W 5	W 6	W 10	NW 2	NW 2	NW 2	W 1
15............	E 4	NE 3	NE 2	SE 4	SW 7	NW 7	NW 6	NW 7	NW 6	S 6	W 6	SE 7
16............	S 3	S 3	SE 4	SE 3	S 3	S 4	S 3	S 2	S 4	S 6	S 10	S 11
17............	E 17	S 18	S 18	S 21	S 20	S 15	S 14	S 13	S 12	E 12	S 14	E 14
18............	E 10	SE 8	SE 7	SE 3	SE 6	E 6	E 4	S 1	SE 0	SE 1	SE 2	SE 2
19............	SE 16	SE 17	SE 11	S 12	SE 12	E 11	SE 12	SE 12	SE 12	SE 13	SE 16	SE 14
20............	SE 16	SE 17	S 19	SE 17	SE 17	SE 12	SE 8	SE 10	SE 7	S 7	E 5	W 4
21............	SE 3	SE 3	SE 3	SE 2	SE 2	SE 2	E 3	SE 6	SE 3	SE 6	SE 7	SE 4
22............	N 5	NE 4	N 2	NE 4	N 5	N 3	N 4	NE 6	N 6	N 3	SE 3	SE 4
23............	E 2	S 0	NE 1	NE 1	E 1	E 1	E 1	E 0	SE 1	E 0	SE 1	S 1
24............	S 6	S 4	S 5	SW 2	S 7	SE 10	SE 11	SE 12	SE 11	S 11	S 14	S 18
25............	S 20	S 13	S 18	NW 15	S 12	NW 10	N 20	NE 20	SW 18	S 15	NE 18	N 15
26............	S 16	SW 13	SW 17	S 15	SW 14	SW 15	SW 10	SW 10	W 7	S 6	W 4	W 4
27............	N 3	W 3	W 4	E 2	NE 2	E 3	S 3	S 3	S 3	S 2	S 2	S 2
28............	S 13	S 13	S 15	S 14	S 11	S 2	S 8	S 5	S 10	S 9	S 8	S 7
29............	SE 15	W 18	W 18	S 22	S 19	NW 16	S 17	NW 17	W 13	W 18	NE 10	W 4
30............	SE 10	S 9	SW 9	S 12	S 8	S 6	W 3	SW 3	SW 3	S 3	SW 4	W 3
31............	S 10	S 10	S 10	S 9	S 7	S 7	S 6	S 5	S 3	SE 6	SE 4	SE 3

[illegible]	5
[illegible]	S
[illegible]	2
[illegible]	SW
[illegible]	6
N	NE
[illegible]	3
S	S
5	5
S	S
2	23
S	S
3	14
S	S
1	1
SE	SE
1	1
S	NE
15	16
W	W
3	4
N	W
5	4
SW	SE
1	2
SE	SE
1	1
S	S
11	9
E	S
5	7
SE	SE
13	14
SE	SE
7	9
SE	SE
6	5
S	N
4	4
N	N
1	1
8	S
8	3
8	8
16	17
W	W
13	17
W	W
1	2

THE DIRECTION AND VELOCITY OF THE WIND,

For September, 1870.

Date.	0 h.	1 h.	2 h.	3 h.	4 h.	5 h.	6 h.	7 h.	8 h.	9 h.	10 h.	11 h.
1............	E 7	S 6	S 7	SW 10	S 10	SE 7	S 6	S 9	SE 11	S 6	E 8	S 8
2............	S 11	E 12	E 8	S 9	S 9	S 7	S 6	SE 6	SE 9	S 7	S 8	S 8
3............	N 3	NE 3	W 4	NW 4	N 4	N 4	W 3	W 4	W 6	W 6	W 3	W 4
4............	S 2	W 3	S 5	W 2	NW 3	W 5	W 2	W 3	W 4	W 4	SW 2	SW 2
5............	NW 10	W 10	NW 10	W 14	W 13	W 9	SW 6	W 3	SE 2	SE 1	S 1	W 3
6............	NW 8	W 9	W 9	W 8	W 7	W 9	W 7	W 4	W 6	SE 7	E 5	SW 3
7............	NE 3	NE 6	NE 7	NE 7	E 3	NE 1	NE 4	N 4	NE 3	N 3	NE 1	N 1
8....	E 2	SE 2	SE 2	S 2	S 2	S 4	S 8	S 10	E 14	SE 14	SE 11	S 11
9............	S 17	S 17	S 15	S 15	S 16	S 13	S 10	S 10	SE 10	S 9	S 10	S 7
10............	NE 8	E 3	E 3	E 6	W 7	N 7	N 10	N 10	N 9	NW 10	W 10	W 9
11....	W 6	N 7	NE 4	NE 5	W 7	W 5	W 7	W 8	W 6	N 4	W 4	W 5
12............	W 4	E 4	W 4	E 4	E 5	E 3	SE 2	SE 3	SE 1	E 1	SE 3	SE 5
13............	E 2	E 4	NE 5	E 4	E 4	E 3	E 2	E 2	E 1	E 1	E 1	E 0
14............	NE 3	E 3	E 1	E 1	E 1	E 2	E 1	NE 1	NE 1	E 1	E 1	E 2
15............	S 8	S 10	S 10	S 11	S 10	S 10	S 5	S 7	S 8	S 10	S 9	S 8
16............	E 7	E 7	E 9	NE 13	N 13	NE 9	NW 8	NW 7	NW 6	SE 3	N 2	N 1
17............	SE 3	NW 3	SE 4	NE 5	N 8	NE 7	E 5	NE 5	E 5	E 4	NE 4	SE 4
18............	W 17	NW 20	N 20	N 17	NE 17	NE 19	NE 12	N 12	SE 10	N 12	N 9	N 10
19............	W 6	W 8	W 8	W 7	W 8	W 2	W 2	W 2	N 1	N 2	N 2	N 1
20............	N 3	W 5	NE 5	E 6	N 6	E 2	SE 1	SE 2	S 2	N 3	SE 4	SE 2
21......... ...	SW 14	S 12	S 11	S 11	S 11	S 8	S 4	S 5	E 3	S 6	S 9	S 7
22............	SE 1	SW 4	S 10	SW 10	S 8	S 7	S 3	S 4	S 10	S 10	S 8	S 7
23............	SW 6	SW 2	SW 7	SW 2	W 2	SW 3	W 3	W 2	W 2	W 1	W 1	S 2
24...	SE 2	E 2	E 2	E 2	NE 1	S 2	W 1	SW 2	E 2	E 1	E 4	S 2
25....	NE 5	NE 6	NE 8	NE 7	NE 2	NE 1	NE 10	NE 3	NE 3	NE 3	NE 3	NE 2
26............	NW 9	W 9	NW 8	N 8	N 8	N 6	W 5	W 4	W 3	W 3	W 3	W 2
27............	SE 4	NE 9	SE 9	SW 9	SW 6	W 2	W 2	W 1	W 2	NE 1	E 2	SW 1
28.	SW 3	S 3	W 2	SW 2	SW 2	E 2	E 1	E 1	NE 1	NE 1	NE 1	NE 1
29.	E 3	S 4	S 12	S 9	S 8	S 7	S 6	S 4	S 3	S 4	SE 4	SE 3
30......... ...	E 3	E 4	N 4	N 6	N 8	NE 8	SW 3	W 1	W 3	W 2	W 1	W 1

THE DIRECTION AND VELOCITY OF THE WIND,

FOR SEPTEMBER, 1870.

DATE.	12 h.	13 h.	14 h.	15 h.	16 h.	17 h.	18 h.	19 h.	20 h.	21 h.	22 h.	23 h.
1.	S 7	SW 5	SW 3	SW 3	SW 3	S 3	S 4	SE 7	SW 9	SE 8	S 11	S 10
2.	S 9	S 8	S 6	S 7	S 4	SW 2	SW 1	SW 1	SW 2	W 3	NE 4	NE 3
3.	W 4	W 3	W 4	W 3	W 2	W 1	W 3	S 6	S 5	E 3	SW 3	N 2
4.	W 2	W 1	W 1	W 2	W 2	W 3	W 8	W 10	W 14	SW 14	W 15	W 12
5.	W 3	W 5	W 2	NW 3	W 1	W 1	W 1	W 1	SE 4	NW 7	W 8	NW 7
6.	SW 3	SW 3	W 3	W 3	W 3	W 4	W 2	W 2	W 1	W 3	N 6	NW 4
7.	N 2	NE 2	N 2	N 2	NE 2	NE 2	NE 3	N 3	N 3	SW 3	SE 2	SE 2
8.	S 9	S 6	S 5	S 7	S 15	SW 13	S 13	S 13	S 12	SE 14	S 14	S 18
9.	S 13	S 14	S 15	S 10	S 12	S 12	S 14	S 12	S 7	NE 2	E 2	NE 10
10.	N 11	N 9	W 6	W 2	W 2	W 2	W 2	W 3	W 7	W 6	W 4	W 6
11.	W 1	W 1	W 1	W 1	W 1	W 1	W 1	W 1	SW 4	E 2	W 2	W 3
12.	N 2	N 1	E 1	E 1	N 1	N 0	W 1	W 1	E 0	E 1	E 2	NE 3
13.	E 2	NE 1	NE 2	NE 1	W 1	NE 1	SW 1	NE 1	SE 1	S 1	W 1	NE 1
14.	S 3	S 6	S 7	S 3	S 6	S 5	S 4	S 5	S 7	S 7	S 8	S 8
15.	S 6	S 6	S 6	S 6	S 6	S 5	S 4	S 4	S 5	S 2	S 3	E 7
16.	SE 2	SE 1	N 1	SE 1	SE 1	NE 1	N 1	SE 1	SE 1	W 3	SW 2	NE 3
17.	NE 5	N 5	NW 4	N 4	W 5	NW 5	N 6	NW 12	N 13	N 11	N 15	W 16
18.	N 7	SE 7	NE 7	NE 5	NE 6	SE 6	W 6	W 5	W 7	NE 8	W 7	W 10
19.	NE 2	SE 2	E 2	NE 2	NE 1	NE 1	N 0	E 1	NE 3	W 2	W 5	W 2
20.	SE 3	SE 1	NE 1	W 1	W 1	W 1	W 1	W 0	S 2	W 3	S 10	S 11
21.	S 6	S 2	S 2	S 1	S 1	S 1	S 2	W 2	SE 2	S 5	S 4	SE 2
22.	S 8	S 5	S 7	S 8	S 7	S 10	S 11	S 11	S 10	S 8	S 5	S 7
23.	S 2	NE 3	S 4	S 3	S 3	S 9	S 6	S 5	SE 4	SE 4	S 5	SW 2
24.	SE 2	SE 2	SE 2	S 2	S 1	S 5	S 5	S 1	S 1	W 1	E 6	NE 7
25.	NE 2	NE 2	NE 2	NE 2	NE 2	NE 2	NE 2	NE 3	NE 10	E 10	NW 10	NW 10
26.	W 2	W 2	W 2	W 2	W 2	W 2	W 2	W 2	W 2	W 2	W 1	W 4
27.	SW 1	SW 1	SW 1	SW 1	SW 1	SW 1	SW 0	SW 2	SW 3	SW 2	SW 2	SW 2
28.	NE 1	NE 1	NE 1	NE 2	NE 1	W 1	SW 1	W 0	S 2	N 3	SW 3	N 3
29.	S 3	S 5	S 3	S 4	SE 6	SE 4	SE 5	S 4	S 7	S 8	SE 7	SE 8
30.	W 2	W 1	W 2	W 2	W 1	W 1	W 4	W 5	S 2	SW 2	W 4	W 9

THE DIRECTION AND VELOCITY OF THE WIND,

FOR OCTOBER, 1870.

DATE.	0 h.	1 h.	2 h.	3 h.	4 h.	5 h.	6 h.	7 h.	8 h.	9 h.	10 h.	11 h.
1.............	SW	W	SW	W	N	NW	NW	NW	NW	NW	N	N
	11	12	13	8	2	2	4	3	3	3	7	6
2.............	E	N	W	N	NE	E	SE	E	E	S	SE	NE
	3	2	2	1	3	4	3	2	5	10	7	8
3.............	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE
	4	4	3	4	2	2	1	1	1	1	1	1
4.............	S	S	S	S	S	SW	W	W	SW	W	W	W
	13	13	5	6	2	2	2	2	1	1	1	1
5.............	N	NW	W	N	N	W	N	N	SW	N	W	W
	8	12	7	9	7	11	10	8	7	6	5	6
6.............	N	NE	NE	NE	SW	W	N	W	W	W	W	W
	7	6	10	5	5	6	7	5	4	4	3	2
7.............	W	W	N	W	N	W	W	N	W	W	W	N
	6	5	5	5	5	7	7	8	6	10	9	7
8.............	N	N	NE	NE	NE	N	N	W	W	W	W	W
	3	4	4	4	4	4	4	6	2	3	3	2
9.............	W	W	W	W	W	W	W	W	W	W	S	SW
	10	10	6	4	5	1	0	1	3	2	1	1
10.............	SE	S	SE	E	SE	S	S	S	E	SE	SE	SE
	3	6	8	8	5	0	0	1	0	0	3	3
11.............	S	S	SE	S	S	S	S	SE	S	S	S	S
	25	25	22	21	23	15	20	16	15	14	18	19
12.............	S	SE	S	S	S	S	S	S	S	S	S	S
	3	1	1	1	1	1	3	2	2	0	0	0
13.............	S	SE	SE	S	S	W	W	SW	W	W	SE	E
	4	2	3	3	3	6	1	1	1	3	7	7
14.............	W	W	W	W	W	SW	W	W	S	SW	S	S
	10	8	8	7	5	2	2	1	1	2	3	2
15.............	SW	SW	S	S	S	S	S	S	SE	SE	SE	S
	16	18	17	18	10	7	9	5	3	5	6	6
16.............	S	SW	SW	S	SE	S	S	S	S	S	S	S
	16	18	18	17	14	12	15	15	14	12	12	13
17.............	S	SE	S	S	S	S	S	S	S	S	S	S
	13	12	16	14	14	13	13	14	13	15	15	20
18.............	W	SW	W	W	W	W	W	E	W	W	W	SE
	29	26	22	23	26	19	14	13	13	8	9	13
19.............	S	E	E	E	E	E	E	E	S	E	E	N
	3	4	6	8	8	4	3	5	6	7	10	12
20.............	N	NE	E	E	S	S	S	W	W	W	W	W
	3	4	3	4	5	9	9	22	19	12	6	4
21.............	E	SE	W	S	S	S	S	S	S	S	S	E
	12	7	6	9	10	7	7	6	10	8	10	10
22.............	S	W	W	W	W	W	S	W	W	S	W	W
	6	10	7	7	9	8	7	5	2	4	6	0
23	NE	E	NE	E	E	NE	E	SE	S	S	S	W
	4	4	3	3	5	1	1	1	4	4	2	2
24.............	S	W	S	S	S	S	S	S	S	S	S	S
	30	28	25	22	22	23	23	23	22	23	23	22
25.............	S	S	W	S	SW	W	W	W	W	W	W	W
	22	16	12	7	14	10	10	20	17	15	13	9
26.............	N	N	W	E	E	W	W	N	N	S	W	N
	17	20	15	14	14	12	11	10	14	6	5	2
27.............	S	E	S	S	S	S	S	SE	E	S	S	S
	21	19	27	26	30	31	37	38	30	25	24	25
28.............	W	W	W	W	W	W	W	W	W	W	W	W
	23	20	19	15	21	16	8	0	2	6	7	3
29.............	W	W	W	W	W	W	W	W	W	W	W	W
	24	23	26	21	18	19	15	15	12	10	8	8
30.............	E	E	E	S	S	SE	E	E	E	SE	S	E
	3	1	4	6	7	8	20	26	20	24	21	24
31.............	W	W	W	W	W	W	W	W	W	W	W	W
	18	18	19	21	17	10	7	12	13	16	18	14

THE DIRECTION AND VELOCITY OF THE WIND,

For October, 1870.

Date.	12 h.	13 h.	14 h.	15 h.	16 h.	17 h.	18 h.	19 h.	20 h.	21 h.	22 h.	23 h.
1	N 6	NE 0	N 2	N 1	N 3	NW 2	N 1	N 2	N 3	W 4	SW 2	SE 4
2	NE 4	NE 3	E 8	NE 9	E 5	N 2	N 2	N 4	N 5	N 4	W 3	SW 8
3	W 2	NE 4	S 7	S 5	S 10	S 10	S 13	SE 12	E 13	E 16	SE 13	S 14
4	W 1	W 1	S 1	E 1	E 1	SW. 1	S 1	SW 1	S 1	S 1	N 5	NW 6
5	W 7	N 7	W 8	N 4	W 7	N 7	N 5	N 4	N 3	N 4	W 6	NW 5
6	N 3	W 0	N 4	N 1	W 4	W 6	W 2	W 0	N 5	NE 7	NE 7	W 7
7	W 6	W 6	W 4	W 2	W 2	W 2	N 1	W 1	W 8	W 5	W 6	W 4
8	W 2	W 4	W 4	W 1	W 1	W 0	W 0	W 0	N 4	SE 2	SE 4	SE 5
9	SW 1	W 1	W 0	E 1	E 1	E 1	E 1	E 1	E 1	E 1	E 4	SE 3
10	E 4	S 7	SE 4	E 6	S 2	SE 4	E 7	S 4	SE 8	SE 13	S 16	S 23
11	S 17	S 18	S 16	S 12	SW 10	S 10	S 7	S 10	S 6	SW 0	SW 0	SE 2
12	SW 0	W 0	W 0	W 0	SW 0	SW 0	W 0	W 0	W 0	W 3	NE 4	S 3
13	S 2	S 2	W 3	W 8	W 6	W 3	W 1	W 1	W 2	W 6	W 9	W 10
14	SE 1	SE 0	S 0	S 0	S 0	SW 1	SE 3	SE 8	SE 13	NE 12	W 13	SW 13
15	S 8	S 5	S 6	S 7	S 4	SE 8	SE 8	SE 8	S 12	S 11	S 12	S 13
16	S 11	S 12	S 11	S 12	S 12	S 12	SE 12	S 16	S 15	S 18	S 17	SW 15
17	S 20	S 23	S 20	S 21	S 22	S 23	S 23	S 23	S 20	W 16	W 22	S 27
18	W 10	W 9	W 6	W 4	W 4	SE 4	W 3	W 3	W 4	W 2	W 3	E 3
19	E 19	S 22	S 18	E 10	S 13	S 13	S 12	S 10	S 11	E 10	S 11	W 5
20	W 2	W 2	W 4	W 2	W 2	W 1	W 1	W 4	S 8	S 8	S 10	SE 10
21	S 7	SE 6	E 4	E 9	S 9	S 10	S 11	S 10	S 14	S 10	W 8	S 7
22	W 2	W 3	W 5	W 5	W 4	W 4	W 1	W 1	W 3	W 4	W 1	E 4
23	W 1	W 0	S 3	S 4	S 1	S 1	S 3	S 3	S 12	S 19	S 24	S 23
24	S 24	S 12	S 17	S 15	S 13	S 15	S 17	S 18	S 17	S 23	S 24	S 20
25	W 10	W 9	N 11	N 11	W 11	N 14	N 15	N 17	N 16	N 17	E 22	N 17
26	N 2	N 0	N 0	N 0	N 2	NE 4	E 5	E 10	S 15	S 22	E 24	E 25
27	S 20	S 11	S 20	W 18	W 14	W 17	W 17	W 7	W 8	W 13	W 21	W 20
28	W 4	W 3	W 8	W 13	W 11	W 9	W 11	W 10	W 10	W 13	W 20	W 23
29	W 9	W 4	W 1	W 1	W 1	W 0	W 1	W 0	W 1	W 2	E 5	E 2
30	E 25	S 25	SE 23	E 13	S 14	S 13	S 10	S 5	S 1	W 7	W 14	W 13
31	W 4	W 3	W 10	W 10	W 9	W 6	W 7	W 8	W 7	W 7	W 9	W 9

THE DIRECTION AND VELOCITY OF THE WIND,

For November, 1870.

Date.	0 h.	1 h.	2 h.	3 h.	4 h.	5 h.	6 h.	7 h.	8 h.	9 h.	10 h.	11 h.
1............	W 5	NW 6	W 3	W 2	E 1	E 2	E 1	E 3	E 4	E 6	S 6	S 8
2............	S 19	W 20	S 17	S 20	S 23	S 20	S 12	E 15	S 14	E 14	E 16	S 14
3............	W 13	W 10	W 10	W 29	W 40	W 40	W 35	W 30	W 28	W 26	W 23	W 25
4............	W 22	W 13	W 10	W 9	W 3	W 2	W 3	W 2	E 3	E 3	E 3	W 8
5............	W 10	W 17	W 19	W 10	W 13	W 14	W 12	W 12	W 11	W 9	W 9	W 8
6............	W 3	W 3	SW 5	W 4	NE 2	NE 4	NE 2	NE 2	W 3	E 6	SE 5	SE 7
7............	W 10	W 15	W 13	W 8	W 6	N 5	N 8	N 7	N 3	N 3	N 4	NW 6
8............	S 26	S 27	S 26	S 31	S 33	S 30	S 28	S 30	S 28	S 30	S 30	S 29
9............	S 33	S 27	S 21	S 13	S 10	W 0	W 8	W 22	W 16	W 18	W 15	W 11
10............	W 31	W 29	W 23	W 24	W 25	W 20	W 18	W 17	W 11	W 10	W 11	E 10
11............	W 16	W 19	W 20	W 20	W 21	W 18	W 11	W 12	W 11	E 11	E 10	W 8
12............	NE 8	NE 8	NE 10	W 10	W 10	W 9	W 18	W 23	N 23	N 21	NE 12	W 10
13............	W 21	W 25	W 27	W 21	W 18	W 19	W 12	W 10	W 5	W 7	W 9	W 5
14............	E 5	E 4	E 6	E 7	E 10	E 5	E 3	E 5	W 10	N 5	W 7	W 6
15............	W 6	W 8	N 9	E 6	N 4	N 3	N 2	N 4	N 4	W 4	W 2	W 3
16............	E 2	W 2	S 6	S 5	W 8	S 4	S 3	S 5	S 6	S 5	S 10	S 9
17............	W 12	W 14	E 12	S 14	S 7	S 2	S 3	S 0	S 2	SE 2	SE 3	SE 7
18............	S 7	SW 6	W 7	S 5	S 6	W 11	W 20	W 26	W 21	W 15	E 14	W 8
19............	W 24	W 22	W 16	W 20	W 19	W 17	W 19	W 17	W 15	SW 17	SW 21	W 24
20............	SE 10	S 17	S 18	S 11	SE 13	SE 11	S 16	S 11	SE 15	S 13	S 15	S 17
21............	S 4	S 3	S 7	W 11	W 4	W 8	W 10	W 3	W 4	W 7	W 5	W 8
22............	N 10	N 10	N 10	N 10	N 11	N 12	N 12	N 13	N 14	N 17	N 18	N 20
23............	S 18	S 14	SW 12	SW 13	SW 9	W 7	W 11	W 6	W 13	W 11	W 8	W 12
24............	SE 1	E 2	N 6	W 13	W 18	W 17	W 10	W 14	W 10	W 10	W 6	N 3
25............	S 4	SW 2	SE 8	SE 10	E 5	W 1	W 1	SE 3	NE 2	NE 2	W 1	W 2
26............	W 9	SW 10	W 6	W 10	NW 3	W 2	N 2	N 2	N 2	NW 2	NE 3	W 3
27............	W 18	W 20	W 17	W 9	W 8	W 8	W 10	NW 14	W 11	W 3	NW 5	N 2
28............	SW 1	NW 2	SW 7	S 7	S 2	SE 2	SE 6	NE 7	NE 3	N 5	N 4	N 2
29............	N 4	NE 7	N 12	W 19	N 15	W 8	W 5	E 10	N 9	N 8	E 9	N 6
30............	W 10	W 7	SW 6	W 7	W 4	W 3	W 2	W 2	W 3	W 2	S 2	S 1

THE DIRECTION AND VELOCITY OF THE WIND,

FOR NOVEMBER, 1870.

DATE.	12 h.	13 h.	14 h.	15 h.	16 h.	17 h.	18 h.	19 h.	20 h.	21 h.	22 h.	23 h.
1.............	S 10	S 11	S 7	W 7	S 8	S 10	S 10	S 8	S 11	S 12	S 11	S 14
2......... ..	S 17	S 18	S 19	S 20	W 22	S 24	S 23	S 24	S 26	S 23	S 20	W 21
3.............	W 25	W 18	W 14	W 16	W 12	W 10	W 10	W 10	W 17	W 25	W 30	W 20
4.............	W 5	W 3	S 4	S 3	W 2	W 1	S 3	W 3	W 2	S 8	W 9	W 9
5.............	SW 5	SW 6	W 8	W 3	W 3	W 2	W 4	W 7	W 13	W 11	NE 4	NE 9
6.............	S 6	SE 6	S 10	S 7	SW 5	SW 2	SW 2	SW 3	SW 3	W 13	W 12	W 12
7.......	NW 4	W 0	W 0	W 0	W 0	W 0	W 0	W 12	SE 18	S 15	S 18	SE 28
8.	S 29	S 25	S 27	S 27	S 26	S 25	S 25	S 25	S 27	S 27	S 40	S 34
9.............	W 14	W 17	W 17	W 20	W 26	W 20	W 16	W 17	W 20	W 23	W 25	W 28
10.............	E 8	W 8	W 9	W 8	W 10	W 7	W 8	W 12	W 12	W 14	W 18	W 15
11.............	W 3	W 2	W 2	W 2	W 9	N 11	N 12	N 11	N 7	N 6	W 6	NE 9
12.............	W 10	W 7	W 4	W 5	W 4	W 3	W 3	W 4	W 5	W 7	W 21	W 20
13......... ...	W 3	W 7	W 8	W 7	W 4	W 1	W 1	W 1	W 1	S 9	S 6	S 5
14.............	W 10	W 14	W 15	W 9	W 6	W 8	W 5	W 3	W 3	N 5	W 3	W 3
15.	W 2	W 2	W 3	W 3	N 1	W 0	E 0	E 0	E 0	S 3	E 3	S 4
16.............	S 10	S 10	SE 9	S 8	S 9	S 7	S 10	S 9	SE 8	S 14	SE 13	W 14
17.............	S 10	S 8	S 6	S 10	S 12	S 12	S 10	S 12	NE 11	S 11	SW 6	S 8
18......... ...	W 6	W 2	W 0	W 0	W 0	W 0	W 0	W 2	E 7	W 15	E 19	W 20
19.............	W 14	W 16	W 14	W 9	W 5	W 4	W 4	W 3	W 1	W 2	SE 4	S 9
20.	S 16	W 15	W 11	N 11	SE 10	SE 10	SE 11	W 12	SE 12	SE 12	SE 10	SE 9
21....	W 8	S 10	N 10	NE 8	N 9	N 8	N 5	N 4	N 3	N 10	N 10	N 10
22........	N 20	W 20	W 20	W 16	NW 16	S 21	SW 20	S 20	S 20	S 20	S 20	SW 22
23.............	W 21	W 23	W 28	W 24	W 21	W 17	W 20	W 18	W 8	W 3	W 3	SE 3
24.............	S 1	W 1	W 1	SW 1	W 3	W 3	SW 4	SE 2	SW 2	SW 3	S 7	S 5
25.............	E 1	NW 1	NW 1	N 1	NE 2	E 6	W 10	W 10	W 2	SE 8	W 8	S 3
26.............	E 7	E 7	E 9	W 10	S 12	S 15	S 14	S 15	S 18	S 14	S 12	S 7
27.............	NW 6	N 5	N 8	N 4	N 8	N 2	N 2	N 1	N 0	NW 3	E 3	SW 3
28.............	N 1	W 1	W 2	W 0	W 1	W 2	S 3	S 8	E 10	E 2	E 3	E 3
29.............	E 6	N 6	W 7	W 16	W 16	W 10	E 12	W 20	W 14	W 18	W 16	W 10
30.............	S 1	SE 2	SE 2	S 2	SE 3	S 6	S 6	SE 15	S 16	S 18	SE 20	SE 20

THE DIRECTION AND VELOCITY OF THE WIND,

For December, 1870.

Date.	0 h.	1 h.	2 h.	3 h	4 h.	5 h.	6 h.	7 h.	8 h.	9 h.	10 h.	11 h.
1…………	S 19	SE 14	S 16	S 13	S 10	S 12	S 10	S 16	S 17	S 16	S 12	S 14
2…………	W 19	W 14	W 13	W 13	W 2	W 0	W 3	W 2	W 6	W 13	W 20	W 26
3…………	NW 19	W 13	NW 12	W 13	W 2	W 1	W 6	SW 7	S 9	S 10	S 7	S 5
4…………	S 5	S 2	S 1	S 1	S 0	S 0	S 0	S 0	S 2	S 1	S 0	S 0
5…………	N 2	N 4	N 2	SE 18	SE 19	SE 14	SE 11	S 20	S 22	S 11	S 3	S 1
6…………	S 1	S 9	W 8	W 15	SW 18	W 20	W 21	W 27	W 28	W 18	W 20	W 22
7…………	W 4	N 4	NE 5	NE 4	NE 2	NE 3	NE 5	SE 2	SE 5	SE 13	SE 10	S 15
8…………	NW 1	E 1	E 1	E 2	E 2	E 2	E 2	E 4	E 5	E 10	SE 25	W 23
9…………	NW 10	NW 11	NW 9	NW 4	N 6	W 11	W 11	W 11	W 13	W 16	W 18	W 19
10…………	W 24	W 30	W 33	W 33	W 30	W 30	W 23	W 19	W 11	NW 11	W 13	NW 13
11…………	NE 9	NE 7	N 8	N 6	N 5	NE 4	NE 2	N 2	N 2	N 2	SW 3	N 0
12…………	E 6	SE 16	E 17	NE 4	W 9	W 7	S 10	S 3	W 4	W 6	W 9	NW 10
13…………	N 3	NE 2	NE 2	SE 7	E 8	W 10	W 7	W 4	W 0	W 1	W 3	W 2
14…………	W 10	W 12	W 14	W 16	W 18	W 20	W 20	W 20	W 20	W 20	W 20	W 20
15…………	W 32	W 28	SW 31	W 26	W 24	NW 25	W 28	W 23	NW 18	W 26	W 25	W 23
16…………	W 28	W 27	W 27	W 24	W 16	NW 14	NW 19	NW 16	NW 15	NW 20	NW 15	NW 14
17…………	NW 0	NW 0	NW 1	SW 1	SW 5	S 5	S 7	S 11	S 13	S 12	S 15	S 15
18…………	W 16	W 16	W 20	W 21	W 16	W 18	W 15	W 14	W 9	NW 12	W 15	W 11
19…………	NE 0	NW 0	NW 0	NE 0	NE 0	NE 0	SE 0	SE 0	SE 1	E 5	SE 8	SE 14
20…………	NW 14	W 14	W 12	W 9	W 4	W 5	W 10	W 6	W 4	SW 4	SW 4	SW 4
21…………	W 14	W 17	W 17	W 18	W 18	W 20	W 20	W 17	W 10	W 11	W 8	W 5
22…………	W 4	NE 2	W 2	N 2	N 4	N 2	N 2	N 3	N 3	N 3	N 5	N 4
23…………	N 3	NE 6	NE 3	NE 7	NE 7	NE 3	NW 4	NW 7	NW 4	NW 1	NW 0	W 5
24…………	W 21	W 20	W 17	W 14	W 7	W 7	W 19	W 14	W 15	W 11	W 7	W 6
25…………	W 10	W 7	W 7	W 4	W 6	W 4	W 2	N 7	SE 4	S 10	E 15	S 19
26…………	S 24	NE 12	S 12	SE 10	S 8	S 8	S 8	W 11	W 9	W 8	W 3	W 2
27…………	SE 15	SW 18	S 19	S 19	SE 18	S 18	S 9	S 14	S 16	S 20	S 16	S 12
28…………	S 4	SE 3	SE 0	SE 1	S 3	W 3	W 10	N 17	N 20	NW 20	NW 20	N 18
29…………	NE 16	W 16	W 14	W 10	N 9	NW 7	W 7	W 10	N 10	NW 10	W 6	N 10
30…………	S 12	S 12	SW 13	E 23	SE 26	S 29	S 35	S 28	SE 20	SE 20	SE 23	S 21
31…………	S 5	W 2	W 2	W 2	W 1	W 2	W 3	W 7	W 9	W 13	W 8	W 17

THE DIRECTION AND VELOCITY OF THE WIND,

For November, 1870.

Date.	12 h.	13 h.	14 h.	15 h.	16 h.	17 h.	18 h.	19 h.	20 h.	21 h.	22 h.	23 h.
1	S 10	S 11	S 7	W 7	S 3	S 10	S 10	S 8	S 21	S 22	S 21	S 14
2	S 17	S 18	S 19	S 20	W 22	S 24	S 23	S 24	S 26	S 28	S 29	W 21
3	W 25	W 18	W 14	W 16	W 12	W 10	W 10	W 10	W 17	W 25	W 20	W 29
4	W 5	W 3	S 4	S 3	W 2	W 1	S 3	W 3	W 2	S 8	W 9	W 9
5	SW 5	SW 6	W 8	W 3	W 3	W 2	W 4	W 7	W 13	W 11	NE 4	NE 9
6	S 6	SE 6	S 10	S 7	SW 5	SW 2	SW 2	SW 3	SW 3	W 13	W 12	W 12
7	NW 4	W 0	W 0	W 0	W 0	W 0	W 0	W 12	SE 18	S 15	S 18	SE 28
8	S 29	S 25	S 27	S 27	S 26	S 25	S 25	S 25	S 27	S 27	S 40	S 34
9	W 14	W 17	W 17	W 20	W 26	W 20	W 16	W 17	W 20	W 23	W 25	W 28
10	E 8	W 8	W 9	W 8	W 10	W 7	W 8	W 12	W 12	W 14	W 18	W 15
11	W 3	W 2	W 2	W 2	W 9	N 11	N 12	N 11	N 7	N 6	W 6	NE 9
12	W 10	W 7	W 4	W 5	W 4	W 3	W 3	W 4	W 5	W 7	W 21	W 20
13	W 3	W 7	W 8	W 7	W 4	W 1	W 1	W 1	W 1	S 9	S 6	S 5
14	W 10	W 14	W 15	W 9	W 6	W 8	W 5	W 3	W 3	N 5	W 3	W 3
15	W 2	W 2	W 3	W 3	N 1	W 0	E 0	E 0	E 0	S 3	E 3	S 4
16	S 10	S 10	SE 9	S 8	S 9	S 7	S 10	S 9	SE 8	S 14	SE 13	W 14
17	S 10	S 8	S 6	S 10	S 12	S 12	S 10	S 12	NE 11	S 11	SW 6	S 8

THE DIRECTION AND VELOCITY OF THE WIND,

For December, 1870.

Date.	0 h.	1 h.	2 h.	3 h	4 h.	5 h.	6 h.	7 h.	8 h.	9 h.	10 h.	11 h.
1	S 19	SE 14	S 16	S 13	S 10	S 12	S 10	S 16	S 17	S 16	S 12	S 14
2	W 19	W 14	W 13	W 13	W 2	W 0	W 3	W 2	W 6	W 14	W 20	W 26
3	NW 19	W 13	NW 12	W 13	W 2	W 1	W 6	SW 7	S 9	S 10	S 7	S 5
4	S 5	S 2	S 1	S 1	S 0	S 0	S 0	S 0	S 2	S 1	S 0	S 0
5	N 2	N 4	N 2	SE 18	SE 19	SE 14	SE 11	S 20	S 22	S 11	S 3	S 1
6	S 1	S 9	W 8	W 15	SW 18	W 20	W 21	W 27	W 28	W 18	W 20	W 22
7	W 4	N 4	NE 5	NE 4	NE 2	NE 3	NE 5	SE 2	SE 5	SE 13	SE 10	S 15
8	NW 1	E 1	E 1	E 2	E 2	E 2	E 2	E 4	E 5	E 10	SE 25	W 23
9	NW 10	NW 11	NW 9	NW 4	N 6	W 11	W 11	W 11	W 13	W 16	W 18	W 19
10	W 24	W 30	W 33	W 33	W 30	W 30	W 24	W 19	W 11	NW 11	W 13	NW 13
11	NE 9	NE 7	N 8	N 6	N 5	NE 4	NE 2	N 2	N 2	N 2	SW 3	N 0
12	E 6	SE 16	E 17	NE 4	W 9	W 7	S 10	S 3	W 4	W 6	W 9	NW 10
13	N 3	NE 2	NE 2	SE 7	E 8	W 10	W 7	W 4	W 0	W 1	W 3	W 2
14	W 10	W 12	W 14	W 16	W 18	W 20	W 20	W 20	W 20	W 10	W 20	W 20
15	W 32	W 28	SW 31	W 26	W 24	NW 25	W 28	W 23	NW 18	W 26	W 25	W 23
16	W 28	W 27	W 27	W 24	W 16	NW 14	NW 19	NW 16	NW 15	NW 20	NW 15	NW 14
17	NW 0	NW 0	NW 1	SW 1	SW 5	S 5	S 7	S 11	S 13	S 12	S 15	S 15
18	W 16	W 16	W 20	W 21	W 16	W 18	W 15	W 14	W 9	NW 12	W 15	W 11
19	NE 0	NW 0	NW 0	NE 0	NE 0	NE 0	SE 0	SE 0	SE 1	E 5	SE 8	SE 14
20	NW 14	W 14	W 12	W 9	W 4	W 5	W 10	W 6	W 4	SW 4	SW 4	SW 4
21	W 14	W 17	W 17	W 18	W 18	W 20	W 20	W 17	W 10	W 11	W 8	W 5
22	W 4	NE 2	W 2	N 2	N 4	N 2	N 2	N 3	N 3	N 3	N 5	N 4
23	N 3	NE 6	NE 3	NE 7	NE 7	NE 3	NW 4	NW 7	NW 4	NW 1	NW 0	W 5
24	W 21	W 20	W 17	W 14	W 7	W 7	W 19	W 14	W 15	W 11	W 7	W 6
25	W 10	W 7	W 7	W 4	W 6	W 4	W 2	N 7	SE 4	S 10	E 15	S 19
26	S 24	NE 12	S 12	SE 10	S 8	S 8	S 8	W 11	W 9	W 8	W 3	W 2
27	SE 15	SW 18	S 19	S 19	SE 18	S 18	S 9	S 14	S 16	S 20	S 16	S 12
28	S 4	SE 3	SE 0	SE 1	S 3	W 3	W 10	N 17	N 20	NW 20	NW 20	N 18
29	NE 16	W 16	W 14	W 10	N 9	NW 7	W 7	W 10	N 10	NW 10	W 6	N 10
30	S 12	S 12	SW 13	E 23	SE 26	S 29	S 35	S 28	SE 20	SE 20	SE 23	S 21
31	S 5	W 2	W 2	W 2	W 1	W 2	W 3	W 7	W 9	W 13	W 8	W 17

THE DIRECTION AND VELOCITY OF THE WIND,

FOR DECEMBER, [illegible]

Date.	1 h.	3 h.	5 h.	7 h.	9 h.	11 h.	13 h.	15 h.	17 h.	19 h.	21 h.	23 h.
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

MEAN HOURLY VELOCITY OF THE WIND.

For 1869.

Hours.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Mean of all.
0...	12.9	10.1	10.3	9.2	7.8	8.9	M 10.0	10.3	7.3	9.6
1...	13.9	10.4	11.3	9.0	7.4	9.7	9.8	M 11.1	7.1	10.0
2...	13.6	11.7	M 11.9	M 10.4	8.7	10.4	9.7	9.9	M 7.7	10.4
3...	15.3	11.7	11.2	10.1	M 9.5	M 10.8	9.8	9.2	7.3	10.5 Max.
4...	15.7	M 12.0	10.9	9.7	8.9	10.2	8.7	8.6	7.4	10.2
5...	14.9	11.1	9.7	9.3	8.3	9.3	8.4	8.1	7.7	9.6
6..	14.7	10.1	9.2	8.7	8.0	8.6	7.4	7.1	7.4	9.0
7...	14.6	9.3	8.0	8.1	7.0	7.3	6.5	6.7	7.7	8.4
8...	13.7	8.6	7.1	7.0	6.9	6.9	6.0	6.7	7.1	7.8
9...	12.9	8.2	6.4	6.0	6.7	6.7	6.1	6.2	6.6	7.3
10...	11.1	6.8	6.1	6.1	6.2	6.9	5.7	6.2	6.5	6.8
11...	10.5	7.0	6.3	6.1	6.3	6.6	m 5.3	m 6.2	6.4	6.7
12...	9.5	6.4	6.5	6.5	6.0	7.2	5.4	6.7	6.2	6.7
13...	8.2	6.5	6.4	6.3	6.0	7.0	6.1	6.8	m 5.5	6.5
14...	8.5	7.2	6.1	5.4	m 5.6	6.6	6.8	7.2	5.7	6.6
15...	9.1	6.8	5.6	5.4	5.7	6.1	6.6	6.5	6.2	6.4 Min.
16...	10.4	m 6.2	5.8	m 5.2	5.9	5.8	6.4	7.7	5.6	6.6
17...	11.9	6.3	m 5.4	6.0	5.9	m 5.1	6.1	7.1	6.1	6.7
18...	11.1	6.3	6.1	6.3	6.6	5.4	6.6	7.5	5.7	6.8
19...	11.5	7.2	6.3	7.2	6.9	5.2	6.6	8.5	5.5	7.2
20...	11.1	7.8	7.0	8.5	7.1	6.1	7.0	9.6	5.5	7.7
21...	11.1	9.4	7.3	8.4	7.0	7.8	8.4	10.1	5.5	8.3
22...	12.4	10.3	8.2	8.9	6.6	8.1	8.0	M 11.5	6.0	8.9
23...	13.4	10.5	9.2	9.6	7.6	8.8	9.1	10.6	5.9	9.4

The month of April was not complete.
The mean hourly velocity for 1869, is 8.1 miles.

MEAN DAILY VELOCITY OF THE WIND,

For 1869.

Date.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1........... ...	....	9.5	5.3	5.3	7.8	5.4	4.3	4.0	12.9
2...............	....	13.9	6.0	5.8	14.5	3.3	14.7	4.0	4.8
3...............	....	19.7	6.3	3.7	7.2	4.7	7.2	6.7	10.0
4...............	....	18.0	17.8	10.9	3.6	6.6	9.2	8.1	18.3
5........... ...	....	8.2	11.2	8.0	5.0	10.7	7.6	7.1	6.0
6...............	...	6.3	7.2	5.5	4.0	11.5	3.2	7.7	10.8
7....	....	5.4	3.8	11.6	5.6	14.2	2.7	10.1	6.7
8...............	....	6.3	6.3	12.8	3.0	8.9	4 7	8.4	1.7
9...............	....	6.2	7.4	6.2	4.2	7.3	8.5	3.2	.7
10...............	....	7.9	13.0	14.7	4 7	3.7	6.5	3.5	1.1
11...............	....	10.8	7.7	9.2	5.1	3.1	4.7	4.0	2.5
12...............	....	11.5	5.4	5.9	6.9	3.0	6.7	2.5	5.8
13.....	....	15.0	14.8	3.2	8.1	4.3	7.9	1.2	8.5
14........... ...	....	6.5	6.1	12.2	7.7	4.6	9.5	2.7	1.9
15...............	....	5.6	6.5	9.5	9.1	7.0	5.9	8.0	7.2
16...............	11.1	9.3	6.0	7.7	4.7	6.2	7.1	14.5	6.1
17	7.9	12.0	3.8	5.4	6.5	13.2	5.0	8.4	2.6
18...............	4.2	6.6	11.4	4.9	7.3	9.2	6.6	6.5	12.0
19...	11.7	8.3	8.5	3.6	11.7	4.4	5.5	24.5	3.0
20...............	17.9	14.2	10.5	12.9	6.4	6.8	8.8	8.3	2.2
21...............	14.7	7.0	7.4	9.4	5.7	10.9	9.3	7.3	8.4
22...............	17.4	5.0	13.1	4.0	6.4	6.0	5.1	10.8	12.4
23...............	15.2	3.5	6.6	7.0	3.3	4.8	9.3	10.4	9.1
24...............	13.0	2.1	5.4	8.5	12.1	9.1	4.2	11.0	12.6
25...........	17.1	5.1	3.6	11.0	10.2	17.4	5.0	5.1	5.9
26...............	11.3	13.2	2.3	13.9	11.0	13.4	6.7	6.7	2.8
		4.6	6.2	4.3	7.7	6.9	9.1	9.1	2.2
		12.4	12.2	8.5	9.5	7.0	10.2	7.5	10.0
		2.0	7.7	6.7	5.9	7.0	11.5	13.9	5.5
		6.5	6.5	2.6	6.7	6.3	14.5	20.7	6.0
		6.0	...	2.3	7.2	....	7.5	....	1.3

MEAN DAILY VELOCITY OF THE WIND,

FOR 1870.

DATE.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1....	4.1	8.5	9.2	5.8	8.4	8.8	4.1	5.6	7.0	4.3	6.7	10.5
2....	24.6	7.7	20.3	11.2	9.2	7.3	3.9	4.7	6.2	4.2	19.2	10.7
3....	1.9	7.2	5.7	20.0	13.2	7.2	3.6	7.6	3.6	6.0	21.5	8.4
4....	5.8	1.7	4.3	17.1	11.8	9.5	12.3	3.9	5.0	2.9	5.5	1.2
5....	12.8	2.4	2.5	7.8	4.2	14.5	8.1	3.8	5.2	6.8	9.1	5.5
6....	14.2	1.6	3.0	3.5	4.6	5.2	13.6	7.2	5.0	4.4	5.3	17.1
7....	6.1	1.5	1.6	4.5	2.5	2.6	14.6	13.3	3.0	5.1	7.6	3.8
8...	7.8	13.9	10.2	3.7	2.9	3.6	5.1	18.9	9.2	2.9	28.5	9.7
9....	12.6	8.8	8.7	2.9	9.6	26.3	6.0	5.7	10.9	2.5	18.2	13.1
10....	11.8	12.2	3.6	3.8	8.2	8.6	3.7	1.3	6.3	5.6	14.9	15.7
11....	10.6	17.6	3.2	8.3	5.2	8.3	10.0	4.0	3.6	14.2	10.7	5.5
12....	8.9	16.2	3.5	13.5	5.3	8.6	3.6	4.4	2.2	1.0	10.6	6.4
13....	13.0	9.6	7.3	5.5	3.9	11.2	6.4	5.1	1.8	3.9	9.7	3.7
14....	4.4	10.0	3.0	6.0	5.1	7.3	5.0	2.9	3.6	4.8	6.5	19.1
15....	7.3	10.2	8.8	14.3	5.8	8.8	1.2	3.6	6.9	9.2	3.2	24.7
16....	5.7	3.1	18.2	16.4	6.2	3.8	7.6	8.0	4.3	14.1	7.7	12.5
17....	10.3	16.2	12.5	12.0	4.4	2.2	5.8	13.9	6.6	18.0	8.1	9.7
18...	4.8	14.4	6.1	12.4	15.5	3.5	2.7	4.8	10.7	11.2	9.0	8.1
19....	6.7	3.0	1.6	4.9	10.9	9.3	5.5	12.7	3.0	9.6	13.2	5.6
20. ..	11.3	16.5	7.3	3.7	6.8	8.0	11.8	7.5	3.4	6.4	12.8	8.8
21....	6.2	13.9	4.7	5.4	9.5	8.7	5.6	3.1	5.5	8.6	7.0	7.8
22....	26.6	11.2	15.5	2.1	5.7	8.1	12.8	2.5	7.5	4.5	16.3	2.3
23 ...	13.2	5.5	19.2	11.7	13.4	7.7	8.8	1.1	3.5	5.3	13.2	7.8
24....	4.3	14.9	15.7	5.5	7.3	4.1	8.5	10.9	2.4	20.9	6.0	11.9
25....	5.0	7.7	4.9	8.0	8.6	6.3	4.6	16.5	4.6	14.0	3.9	14.0
26....	6.3	7.5	11.6	7.6	9.4	11.8	2.8	6.8	3.9	10.4	8.1	8.2
27 ...	4.5	2.4	10.0	12.9	10.1	7.7	11.3	4.3	2.7	21.6	7.1	12.2
28....	6.7	9.5	4.5	7.3	4.5	5.8	14.0	9.2	1.6	11.5	3.5	12.9
29....	9.9	....	6.5	2.8	6.1	3.0	6.5	12.0	5.5	9.4	11.0	8.5
30....	3.7	..	2.7	10.0	7.3	7.8	5.2	4.5	3.3	13.6	6.7	21.6
31....	4.5	....	2.5	....	6.7	....	3.1	5.4	....	11.1	....	9.2

MEAN HOURLY VELOCITY OF THE WIND.

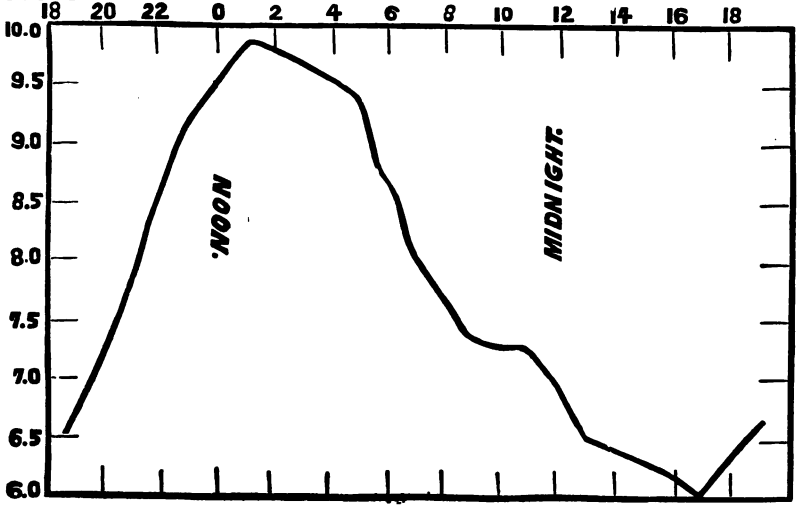
For 1870.

Hour.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Mean of year.	Bi-hourly mean of the year.
0	9.4	12.2	10.4	9.8	9.5	9.4	8.8	8.8	6.0	11.9	12.1	11.3	10.0	....
1	9.6	12.6	10.0	10.9	11.0	10.4	9.8	8.9	6.6	11.5	12.3	10.9	10.4	10.2
2	9.0	12.5	10.0	10.8	11.3	11.2	9.9	9.4	7.1	11.0	12.3	10.9	9.7	....
3	8.3	12.0	9.6	11.4	11.2	11.5	10.1	9.0	7.2	10.4	12.6	11.0	10.3	10.0
4	8.4	11.4	8.8	11.5	11.1	11.4	10.1	8.9	7.0	10.2	11.7	9.8	10.0	....
5	7.6	10.6	8.4	10.3	10.0	11.2	9.0	8.4	5.8	8.8	10.1	9.8	9.2	9 6
6	7.5	9.3	8.0	8.6	8.9	9.7	8.6	7.3	4.8	8 8	10.1	10.6	8.5	....
7	6.6	9.3	7.7	8.2	8.6	8.5	7.1	6.7	4.6	9.3	10.9	11.0	8.2	8.4
8	7.0	7 7	6.6	7.7	8.8	8.3	7.3	6.4	4.9	8.5	10.1	10.5	7.8	...
9	6.6	7.3	6.1	8.4	7.2	7.2	6.4	6.6	4.7	8 4	9.7	11.4	7.5	7.7
10	7.1	7.8	6.8	8.2	5.6	7.6	6.7	6.8	4.5	8.3	9.5	11.5	7.5	...
11	7.6	7.1	6.1	7.3	5.1	6.7	6.3	5.8	4.1	8.1	9.4	11.9	8.0	7.8
12	8.9	7.4	6.1	6.4	5.1	6.0	6.0	5.9	4.2	7.2	9.3	11.4	7.0	....
13	9.1	7.0	6.3	6.6	5.7	5.6	5.5	6.0	3.7	6.5	9.0	10.6	6.8	6.9
14	10.3	6.5	6.1	5.6	5.1	5.6	5.2	5.7	3.5	7.1	9.2	10.5	6.7	...
15	9.0	7.0	6.8	6.4	5.1	5.8	4.9*	5.5	3.1	6.6	8.2	9.3	6.5	6.6
16	10.0	6.9	7.1	6.2	5.0	5.7	4.5	5.3	3.3	6.4	8.7	9.1	6.5	....
17	9.3	6.7	6.9	5.7	4.4	4.9	3.9	4.9	3.5	6.5	8.2	8.3	6.1	6.3
18	9.6	7.1	7.0	5.6	5.0	6.0	5.1	5.1	3.8	6.5	8.4	7.4	6.4	....
19	10.3	8.3	6.8	7.2	6.2	6.4	6.6	6.0	4 1	6.5	9.5	7.2	7.1	6.8
20	10.3	8.6	7.4	8.3	6.4	7.3	6.0	6.8	5.0	7.8	9.9	8.1	7.6	....
21	10.8	9.0	8.6	8.7	7.0	6.6	6.2	6.7	5 1	9.0	11.8	9.8	8.3	7.9
22	11 3	11.6	8.1	10.1	8.6	7.4	7.1	7.3	5.7	10.9	12.7	10.8	9.3	...
23	10.9	11.2	8.5	10.3	8.6	8.4	7.5	8.4	6.4	11.0	12.6	11.5	9.6	9.5

The mean hourly velocity for 1870 is 8.1 miles.

Mean Hourly Velocity of the Wind, 1870.

FIG. 3.



The diagram. Fig. [illegible] the mean hourly velocity of the wind for 1870; from [illegible] M., and the minimum at 5 A. M.

SUMMARY OF DIRECTION OF THE WIND.

[illegible]

Months.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.
January	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
February	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
March	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
April	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
May	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
June	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
July	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
August	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
September	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
October	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
November	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
December	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible] in the year	4	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

The foregoing [illegible] shows the number of times the wind [illegible] from each of the [illegible] principal points of the compass. The [illegible] winds appear [illegible]

[illegible]

[illegible]

[illegible]

THERMOMETER.

1862.

Date.	January.		February.		March.		April.		May.		June.		July.		August.		September.		October.		November.		December.	
	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.
1 ..	....	....	8	22	20	22	39	39	52	51	62	58	60	65	67	75	72	64	46	50	47	55	40	39
2 .	....	....	25	22	16	21	33	39	49	55	60	70	64	66	71	79	53	50	52	57	48	61	33	27
3 ..	....	....	10	19	15	29	37	42	55	53	66	62	62	71	71	80	50	59	59	67	51	44	23	26
4 ..	....	...	19	22	34	28	36	34	47	56	58	55	66	72	74	82	54	68	67	75	30	37	19	28
5 ..	....	....	5	17	25	31	33	34	52	48	57	64	70	83	80	73	63	74	51	54	40	50	30	33
6 ..	..	....	11	33	26	27	35	31	49	53	60	70	78	84	71	73	70	77	41	58	39	32	27	15
7 .		....	33	30	24	35	26	30	50	41	59	58	78	81	68	73	71	76	55	71	27	24	11	14
8 ..	...	...	10	18	35	37	26	29	43	54	52	62	78	75	75	84	71	77	67	76	25	32	13	17
9 ..	....	.. ..	10	21	34	37	28	33	54	69	52	67	75	72	80	74	65	65	69	64	33	32	9	21
10 ..	....	....	14	21	37	40	31	37	62	54	54	69	70	66	70	76	60	69	60	59	33	35	22	27
11 ..	....	....	16	25	34	35	32	36	45	57	66	67	63	74	68	78	64	72	53	51	22	40	26	40
12 ..	....	....	29	33	29	34	32	41	47	63	60	75	65	72	77	73	70	70	42	49	42	43	36	37
13 ..	....	....	28	30	27	31	33	48	57	47	68	73	68	78	65	71	56	56	44	48	37	38	34	40
14 ..	....	....	27	27	33	36	39	54	46	59	65	69	79	73	64	72	55	60	48	55	31	44	42	46
15 ..	....	....	11	19	33	33	48	56	53	70	57	55	69	74	69	62	61	65	47	42	34	25	47	51
16 ..	....	....	17	15	31	29	54	62	57	74	48	66	74	73	57	61	60	59	39	50	18	32	48	36
17 ..	....	....	2	18	30	30	56	65	64	74	55	67	66	65	54	66	61	66	50	50	36	41	29	19
18 ..	...	....	28	34	21	31	59	70	65	74	63	62	72	72	60	69	70	77	42	50	37	40	11	19
19 ..	.. .	....	29	33	22	30	45	46	66	51	65	63	65	68	63	73	70	67	46	47	42	49	25	14
20 ..	....	....	31	24	27	30	44	48	50	57	58	66	67	66	67	77	63	66	38	39	57	46	0	1
21 ..	....	....	18	25	31	35	40	46	53	60	63	62	66	65	66	70	59	64	36	54	37	35	—2	7
22 ..	...	....	25	32	36	37	47	52	62	67	56	66	68	67	75	71	53	63	48	43	34	33	12	24
23 ..	.. ..	....	25	36	36	36	42	34	59	58	63	69	66	60	76	67	59	67	39	36	29	26	26	30
24 ..	....	....	35	19	36	36	32	38	47	52	61	59	66	69	52	62	61	53	31	50	25	34	19	25
25 ..	...	....	5	13	34	29	33	47	46	63	57	61	69	74	56	68	44	57	49	44	29	39	31	39
26 ..	....	....	4	19	24	31	36	50	51	62	63	65	68	72	69	78	47	61	38	39	35	36	38	39
27 ..	....	....	22	25	29	38	42	57	58	67	66	74	71	75	74	74	48	63	39	36	33	35	43	38
28 ..	....	....	18	16	32	28	47	54	61	58	71	79	69	74	74	74	56	67	31	40	34	39	35	34
29 ..	...	....	....	....	21	29	49	52	54	61	73	70	72	68	72	72	60	68	39	45	32	36	30	42
30 ..	....	....	....	....	22	38	44	55	53	66	65	68	71	75	55	55	57	52	42	48	29	36	35	32
31 .	....	....	....	....	33	37	....	....	54	69	....	....	69	68	55	55	....	....	44	56	....	....	24	22

ERMOMETER.

1863.

June.		July.		August.		September.		October.		November.		December.	
8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7P.M.
69	55	70	90	75	82	60	67	48	62	41	39	24	32
50	61	73	83	78	92	56	69	58	62	30	42	32	35
57	61	75	79	81	84	60	67	55	62	46	47	16	24
52	64	73	72	68	93	55	63	56	65	39	42	35	39
50	69	67	71	75	83	50	64	47	53	48	58	41	32
56	65	71	85	74	85	61	71	48	54	47	44	16	18
55	57	74	83	68	78	64	72	49	55	38	42	11	20
52	57	75	74	71	76	67	73	54	56	40	36	14	25
60	65	70	77	75	81	59	58	47	55	30	34	27	26
56	79	71	79	76	87	45	61	45	51	32	31	15	7
64	75	73	80	76	82	52	63	45	47	30	40	5	19
70	75	72	67	74	75	61	71	43	44	38	44	32	36
64	66	65	67	64	86	57	62	38	47	35	42	43	51
60	76	66	77	71	81	62	68	41	55	39	45	40	46
69	78	72	83	74	76	64	74	49	62	45	46	35	31
57	66	68	69	67	70	66	76	54	60	45	45	21	23
56	60	59	58	59	66	70	75	62	62	46	46	19	20
55	75	63	83	54	69	73	73	55	66	45	44	32	33
62	70	69	84	61	80	54	54	60	50	39	50	28	21
60	67	71	80	71	68	47	51	42	50	44	45	18	17
59	60	68	66	68	75	45	57	43	48	37	40	12	13
61	69	59	84	68	70	43	48	39	46	44	38	10	7
61	69	63	83	68	71	37	50	37	51	31	34	7	9
60	73	65	77	66	81	44	60	45	44	30	41	14	15
61	80	72	77	62	59	53	54	35	34	42	39	8	15
64	84	71	80	52	59	45	48	32	34	31	36	8	18
62	90	75	76	53	67	44	52	26	34	31	37	22	29
66	87	67	79	55	66	41	54	25	33	37	45	23	31
63	86	73	84	65	70	42	57	24	37	35	30	30	33
69	88	74	76	53	57	48	59	41	52	19	24	35	35
....	....	72	81	50	66	....	....	56	47	....	....	27	29

THERMOMETER.

1864.

Date.	January.		February.		March.		April.		May.		June.		July.		August.		September.		October.		November.		December.	
	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M	7 P.M.
	38	22	29	35	28	29	37	43	50	50	71	64	67	88	77	87	56	70	42	50	32	34	42	43
	0	5	38	36	25	29	39	40	41	61	60	67	68	70	79	72	58	72	49	51	27	32	34	38
	2	13	33	33	19	28	41	46	43	46	55	60	68	76	71	66	64	70	52	59	24	33	43	47
	16	14	31	31	27	41	35	45	44	56	55	80	62	71	64	74	63	62	58	61	40	49	40	36
	12	18	33	39	38	47	34	42	47	72	63	70	62	80	67	81	61	58	50	60	39	33	35	36
	13	15	31	37	37	37	32	50	56	82	68	66	67	85	72	80	54	62	59	64	28	41	33	38
	—3	4	33	31	32	33	33	53	58	67	50	65	66	76	74	81	51	64	57	60	46	49	34	50
	1	11	32	30	23	35	39	55	59	72	55	71	70	88	69	79	54	60	54	50	45	52	33	18
	10	10	23	23	33	34	41	51	65	73	62	71	66	92	74	80	57	64	38	39	61	64	14	20
	5	16	14	6	27	36	41	38	64	70	47	56	76	82	73	85	61	68	37	51	64	47	20	27
	2	14	3	25	35	43	35	40	45	48	47	58	75	75	76	81	55	51	40	47	40	42	26	30
	11	25	30	35	41	40	37	38	51	65	52	69	72	81	65	77	54	56	36	45	36	41	15	16
	26	28	31	35	37	34	39	40	61	64	52	80	67	88	71	76	52	55	42	42	33	29	7	18
	16	25	34	26	26	31	38	45	65	68	57	81	68	84	72	79	55	62	40	44	27	27	27	28
	33	35	10	20	24	33	40	47	65	70	65	77	71	85	69	83	57	59	42	43	19	30	7	16
	26	22	26	20	26	26	41	46	68	74	68	84	70	90	69	75	55	57	41	45	24	27	19	24
	15	32	2	—2	27	34	38	39	66	73	67	80	74	92	70	75	47	61	46	46	17	37	25	33
	31	34	—7	5	32	43	37	44	61	69	64	82	73	91	66	69	53	67	35	43	39	36	29	22
..	35	38	—1	11	22	27	39	45	57	73	67	90	73	89	60	78	57	56	41	44	34	33	32	37
..	28	23	13	26	21	20	40	45	57	69	69	82	75	88	65	69	47	63	40	46	27	40	19	17
..	15	22	25	35	13	19	41	54	64	76	70	85	72	70	65	72	52	66	43	46	36	40	17	21
..	23	31	36	41	14	22	40	58	59	68	67	83	58	69	70	73	50	61	35	46	35	34	10	0
23 ..	28	37	37	45	18	29	48	62	52	74	74	85	59	78	68	72	61	66	43	48	28	30	—3	8
24 ..	38	40	42	38	25	37	52	56	65	65	66	87	66	81	63	76	68	60	42	46	22	31	10	22
25 ..	41	37	32	40	29	45	52	57	60	75	75	95	68	67	71	78	52	50	40	46	30	32	27	30
26 ..	39	32	28	26	41	41	54	49	67	64	82	98	66	78	69	74	40	53	41	44	27	40	36	37
27 ..	33	38	22	31	33	43	49	48	60	75	75	68	70	84	68	72	54	72	38	48	40	40	35	38
28 ..	29	43	36	41	34	44	33	38	61	62	56	74	71	87	66	69	63	62	51	52	36	43	39	37
29 ..	36	28	35	29	34	44	38	47	49	63	57	83	72	83	63	70	57	64	39	42	48	55	32	28
30 ..	26	32	....	....	38	39	39	54	61	75	66	68	67	87	64	65	53	50	40	43	52	50	24	27
31 ..	32	34	...	....	35	36	....	.. .	68	86	....	....	72	91	59	66	....	....	42	39	...	....	28	20

THERMOMETER.

1865.

DATE.	JANUARY.		FEBRUARY.		MARCH.		APRIL.		MAY.		JUNE.		JULY.		AUGUST.		SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.	
	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.
1..	7	11	31	31	27	27	37	43	44	45	67	78	70	71	70	83	74	83	57	60	35	42	37	35
2..	15	23	9	13	25	32	38	44	43	60	61	67	73	77	73	85	74	79	56	51	44	51	31	42
3..	16	24	1	19	33	36	34	52	47	59	56	80	66	82	74	80	64	84	45	52	44	45	41	42
4..	23	19	26	36	34	38	36	46	46	58	68	84	70	80	75	74	68	82	45	45	44	45	45	49
5..	8	22	31	22	25	22	43	57	54	57	68	68	66	82	73	85	75	75	43	45	42	33	40	30
6..	26	33	14	18	14	28	51	59	50	48	65	75	62	70	75	79	68	74	44	51	27	40	23	33
7..	23	11	17	23	24	37	60	50	48	60	66	76	70	83	74	76	65	74	42	57	33	27	32	36
8..	1	5	30	30	39	36	37	41	53	71	70	77	70	76	66	76	56	62	55	50	19	30	15	24
9..	17	27	18	13	33	38	32	44	52	51	64	70	67	75	65	84	64	64	51	59	36	41	21	31
10..	28	31	14	25	35	22	39	42	45	55	69	66	60	75	67	73	60	70	57	61	30	31	31	36
11..	13	12	18	6	27	28	42	52	53	49	63	77	65	83	73	65	69	75	41	53	22	26	30	35
12..	19	23	3	4	13	17	46	61	39	60	64	85	65	78	64	70	66	76	44	44	28	36	39	45
13..	25	30	—9	4	27	36	42	46	45	68	66	73	66	65	62	82	66	77	35	43	36	48	39	33
14..	32	24	—6	19	27	42	39	56	52	62	60	70	58	76	64	84	73	74	34	57	43	49	29	21
15..	13	13	11	24	46	52	45	54	59	75	65	64	62	72	65	80	74	74	44	45	39	53	18	16
16..	10	6	26	34	54	60	51	43	63	76	62	76	66	65	69	67	60	72	41	43	41	54	11	17
17..	12	18	31	30	33	44	36	55	66	71	72	89	62	68	59	70	62	78	40	46	53	62	15	20
18..	3	8	30	28	46	39	44	58	50	54	78	82	60	78	60	65	51	48	45	53	41	46	15	28
19..	9	15	26	28	35	43	46	55	50	53	76	77	63	71	65	78	45	58	57	51	37	38	33	38
20..	16	18	26	31	38	47	42	46	58	69	72	74	68	76	68	81	49	63	48	41	38	42	28	27
21..	8	17	14	24	38	63	42	45	66	71	73	81	70	74	72	80	58	68	40	43	40	37	29	17
22..	18	31	6	35	58	46	46	57	65	71	69	85	64	80	65	62	63	69	33	44	38	38	13	18
23..	33	33	35	37	35	40	45	40	57	59	64	80	65	82	55	59	62	68	46	41	37	39	11	17
24..	25	22	22	25	32	35	38	47	50	67	66	87	71	84	53	63	65	67	29	40	40	39	22	33
25..	16	16	10	32	34	37	37	60	57	69	75	86	72	77	55	71	68	67	28	39	37	38	31	39
26..	6	13	37	41	33	36	43	68	53	70	77	81	73	70	60	78	52	54	35	46	38	36	28	41
27..	1	8	35	26	32	43	58	68	51	58	66	67	69	82	68	70	43	58	30	32	31	36	51	42
28..	3	11	19	28	34	46	57	54	51	55	60	72	72	87	56	66	47	63	35	43	27	25	34	35
29..	9	24	....	....	36	51	51	52	57	59	70	83	77	77	53	73	49	66	36	38	22	33	34	30
30..	19	20	....	....	48	52	43	53	57	70	75	75	64	82	56	75	55	72	32	38	28	33	20	20
31..	11	25	....	....	45	40	....	....	59	79	....	....	60	80	69	81	....	....	42	45	....	....	21	31

THERMOMETER.

1866.

DATE.	JANUARY.		FEBRUARY.		MARCH.		APRIL.		MAY.		JUNE.		JULY.		AUGUST.		SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.	
	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M	7 P.M.	8 A.M.	7 P.M.
1..	34	36	23	19	32	37	42	39	43	45	50	70	60	79	68	77	68	77	54	62	34	42	33	27
2..	26	26	13	18	35	38	40	43	42	45	64	78	65	75	74	79	74	79	55	65	44	43	26	29
3..	14	28	11	19	37	42	35	48	43	43	66	64	72	85	68	73	70	76	53	46	39	40	26	35
4..	22	12	10	14	35	26	45	60	46	53	67	69	74	80	71	67	70	68	39	42	33	35	39	47
5..	— 6	9	1	7	18	24	54	68	48	52	72	71	73	83	63	65	72	70	35	43	30	31	43	42
6..	8	3	16	12	21	24	56	47	53	59	73	74	80	90	67	70	62	68	36	49	27	31	36	39
7..	—10	—11	0	21	24	22	38	36	45	66	69	64	82	80	67	70	63	68	43	57	28	42	37	41
8..	—18	— 7	22	37	15	19	35	39	49	64	66	65	78	78	67	71	66	67	62	67	40	50	40	47
9..	— 5	7	22	30	21	23	33	45	57	58	66	65	70	73	65	61	60	59	62	55	44	49	39	32
10..	7	18	29	36	16	24	36	47	56	66	66	71	66	85	65	70	50	65	52	53	44	48	25	21
11..	28	32	38	43	25	35	40	55	63	72	63	74	68	82	62	73	60	66	48	52	44	50	17	22
12..	30	33	34	32	38	45	47	59	61	70	61	63	79	88	62	75	70	71	46	49	42	42	19	21
13..	35	38	28	30	40	37	55	49	65	49	64	64	80	86	68	67	65	58	53	53	36	39	17	24
14..	27	0	31	33	37	46	42	49	46	50	63	66	75	88	68	70	62	61	46	53	33	42	13	12
15..	— 5	4	19	18	47	46	48	52	49	59	67	68	77	92	66	64	53	49	49	55	43	51	8	15
16.	13	21	1	8	46	48	45	55	59	53	66	74	85	93	56	62	46	56	46	56	50	43	14	22
17..	27	28	9	23	28	18	45	58	45	70	70	66	85	77	58	68	59	65	56	55	45	41	27	22
18.	29	33	23	29	10	23	48	60	63	60	75	73	83	79	61	78	58	59	45	54	42	43	23	23
19..	27	35	34	35	22	28	62	68	62	74	67	67	64	80	65	66	54	52	45	61	44	50	24	31
20..	42	22	31	36	25	26	61	77	61	78	62	79	70	72	58	66	51	56	55	66	51	51	9	—3
21..	12	15	20	31	34	37	68	71	62	55	68	81	71	74	58	67	63	52	56	64	40	37	—10	—5
22..	14	21	35	43	30	30	66	69	49	46	75	77	68	80	66	64	49	53	61	67	34	36	— 5	20
23..	20	25	40	46	32	34	53	50	49	49	70	85	72	67	61	59	42	52	49	57	33	32	35	39
24..	14	23	50	43	36	32	44	41	48	60	74	87	67	85	57	60	47	58	43	40	29	32	43	38
25..	22	27	31	15	28	17	41	42	57	60	78	90	73	74	55	65	60	65	36	35	29	24	35	31
26..	26	26	7	12	21	26	39	41	55	69	77	85	68	80	59	64	65	52	35	40	22	31	24	28
27..	18	16	30	28	25	31	42	50	60	61	80	72	75	79	60	69	49	58	42	44	25	35	31	29
28..	2	13	28	30	27	41	43	63	60	55	69	66	76	71	67	69	50	59	39	41	42	56	17	15
29..	17	23	....	...	40	38	46	50	56	54	61	80	74	78	66	69	52	61	45	54	60	62	11	16
30..	22	31	....	....	31	31	41	48	55	61	65	69	72	74	63	69	54	67	61	47	46	41	11	15
31..	22	30	....	....	35	40	....	...	59	61	....	....	66	77	63	72	....	....	44	38	....	....	6	16

THERMOMETER.

1867.

DATE.	JANUARY.		FEBRUARY.		MARCH.		APRIL.		MAY.		JUNE.		JULY.		AUGUST.		SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.	
	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.
1..	20	21	38	36	30	35	40	43	59	45	67	74	74	73	69	75	64	65	39	55	37	45	11	16
2..	17	20	24	31	38	29	45	41	44	41	64	63	67	81	69	75	59	68	48	62	47	52	24	25
3..	4	14	37	39	14	22	36	43	34	46	69	75	71	88	70	72	63	72	53	51	40	51	33	33
4..	6	18	34	37	24	28	40	60	37	50	63	68	80	73	65	85	67	71	39	52	49	43	16	16
5..	18	28	35	36	25	28	42	41	47	52	63	75	68	68	73	86	64	74	50	53	36	41	19	27
6..	28	29	37	33	26	29	33	38	50	61	66	85	70	76	74	82	75	76	45	46	35	34	23	36
7..	24	16	26	32	29	32	38	45	51	52	74	71	72	83	80	85	60	64	42	43	25	34	33	28
8..	15	18	26	38	26	27	44	52	47	53	66	64	66	74	77	83	62	68	36	47	39	45	19	15
9..	15	22	47	44	24	34	43	49	49	50	61	84	66	62	79	80	63	67	42	54	49	58	0	3
10..	20	22	19	7	35	38	45	48	52	58	64	74	65	83	78	72	67	52	53	59	51	54	19	15
11 .	17	20	13	26	38	37	41	40	51	56	59	75	70	81	66	78	51	60	54	53	43	50	18	16
12..	14	12	28	33	36	36	37	54	50	55	64	68	75	73	65	77	54	65	49	50	35	34	—2	—1
13..	7	10	35	45	38	37	40	40	50	58	72	77	59	69	74	75	61	74	42	50	30	30	—3	0
14..	6	6	45	42	21	18	36	51	55	54	68	81	60	75	72	79	51	57	47	51	29	31	—1	7
15..	—4	1	28	27	16	24	49	64	56	55	71	74	65	75	72	75	49	57	47	51	29	29	6	18
16..	—9	4	31	34	21	24	59	57	51	54	73	73	72	72	67	68	59	66	42	50	36	39	9	19
17..	11	15	35	37	29	28	50	48	55	54	76	87	68	78	71	74	69	78	47	62	27	30	16	24
18..	4	2	29	34	22	23	46	46	52	51	73	68	68	62	70	75	72	79	58	67	17	17	15	15
19..	2	6	31	24	22	28	39	55	52	58	62	75	63	62	71	76	67	68	55	64	21	17	2	6
20..	9	15	17	20	21	30	54	53	52	56	71	69	61	68	68	70	68	75	55	64	29	36	15	25
21..	19	25	21	27	31	39	46	51	53	61	69	83	67	69	64	75	60	65	55	56	31	38	33	32
22..	21	23	27	26	36	34	45	55	49	50	68	78	68	74	69	69	56	64	59	51	25	40	33	38
23..	22	26	19	25	34	36	40	40	58	56	66	81	68	86	71	72	47	52	40	41	42	46	35	22
24..	28	24	36	31	37	39	39	41	55	61	73	90	74	88	69	71	45	59	33	42	43	47	19	31
25..	8	21	19	22	38	38	44	49	53	61	78	76	81	75	62	71	56	60	36	45	49	48	32	34
26..	26	30	19	30	29	33	43	58	64	54	70	75	72	81	63	77	51	51	37	46	49	41	44	38
27..	26	22	27	30	29	34	48	48	52	68	68	73	75	81	67	75	45	57	36	48	36	38	39	45
28..	19	19	24	37	29	33	33	45	64	75	79	75	77	89	75	75	50	60	37	48	37	37	39	33
29..	13	12	....	....	28	33	39	41	65	70	67	79	78	75	68	73	54	56	46	49	38	43	31	25
30..	1	4	....	....	36	40	45	53	68	68	70	88	77	72	63	59	44	43	50	49	28	16	20	16
31..	8	23	....	....	41	49	....	....	54	67	....	....	61	74	58	64	....	....	49	51	....	....	9	19

THERMOMETER.

1868.

DATE.	JANUARY.		FEBRUARY.		MARCH.		APRIL.		MAY.		JUNE.		JULY.		AUGUST.		SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.	
	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.
1..	22	25	10	17	5	18	41	61	39	53	58	63	70	82	75	76	77	67	44	50	43	39	22	20
2..	33	34	11	19	8	1	48	39	42	45	56	61	78	85	76	80	64	60	47	51	33	35	22	23
3..	32	33	— 7	—3	5	0	33	39	48	65	54	68	80	84	76	79	65	67	51	55	31	32	23	26
4..	33	29	4	20	11	17	35	35	49	65	58	70	78	92	72	75	57	63	42	51	28	39	25	26
5..	10	9	10	24	8	23	25	24	57	60	60	66	86	88	71	75	62	64	49	57	36	43	25	28
6..	9	10	24	25	25	35	26	32	56	55	72	76	70	83	74	70	65	65	55	53	39	36	27	27
7..	0	18	12	4	37	40	34	32	46	42	54	63	75	72	69	76	65	63	52	58	30	31	28	33
8..	22	26	—10	7	45	40	31	26	40	45	65	85	76	83	77	76	60	68	63	47	40	47	33	31
9..	24	9	24	34	32	41	21	24	47	56	69	68	78	84	74	71	65	67	37	44	52	55	20	19
10..	5	11	4	3	37	39	23	27	48	59	55	67	75	84	69	76	67	74	40	51	38	43	14	16
11..	9	18	— 1	8	35	27	33	40	48	53	62	57	79	92	72	69	71	72	56	59	41	37	9	15
12..	6	7	— 1	19	24	34	39	30	49	64	61	59	81	88	65	65	74	77	51	50	35	35	18	23
13..	9	15	16	30	38	43	23	35	56	56	61	75	83	95	58	70	76	75	42	48	34	38	21	23
14..	10	12	8	17	42	44	27	39	60	75	78	80	85	93	67	73	60	64	46	47	36	40	19	23
15..	11	17	21	31	44	52	43	60	61	64	70	78	83	90	71	76	55	62	51	52	32	34	22	23
16..	22	14	24	23	46	48	58	61	65	71	71	86	79	81	64	67	62	53	51	53	30	29	13	22
17..	10	18	14	28	48	62	57	55	65	66	75	85	77	84	57	69	44	50	34	33	27	36	24	35
18..	17	21	16	13	44	34	45	40	57	49	77	86	80	86	70	74	45	57	32	43	33	35	33	21
19..	7	18	18	35	28	37	40	41	49	55	75	90	83	77	76	74	47	57	41	46	36	38	4	8
20..	21	30	21	38	34	39	47	43	52	60	77	85	78	79	75	71	57	59	43	43	33	32	20	34
21..	27	26	34	17	31	32	50	53	51	55	65	70	77	77	71	72	50	48	38	40	33	35	34	35
22..	17	18	— 1	1	24	27	50	51	56	60	65	66	79	81	65	73	43	55	39	36	32	32	32	31
23..	28	35	— 5	—1	30	42	52	35	60	57	59	75	74	77	66	75	53	58	33	35	29	32	27	21
24..	32	28	1	7	36	33	34	50	57	60	66	75	75	76	67	73	50	56	27	35	29	40	12	5
25..	22	25	10	17	31	37	38	48	59	63	68	84	79	76	65	75	47	56	35	45	31	41	8	19
26..	15	9	16	24	30	41	43	46	61	75	71	82	68	76	71	77	53	62	46	47	43	43	14	11
27..	11	12	23	29	32	49	40	39	65	74	71	81	69	76	63	70	51	57	37	51	36	35	1	14
28..	2	11	29	26	35	46	42	56	62	65	67	85	71	76	68	72	59	59	53	43	30	38	24	29
29..	14	20	16	12	35	46	49	56	67	68	66	81	71	80	70	77	53	50	32	34	36	37	29	32
30..	15	17	....	....	37	47	51	62	67	70	70	74	76	77	75	75	46	58	25	33	36	27	20	17
31..	9	19	....	....	36	56	....	....	60	63	....	....	76	76	68	76	....	....	40	55	....	....	9	15

ERMOMETER.

1869

	June.		July.		August.		September.		October.		November.		December.	
.M	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.
40	73	73	57	62	67	78	52	55	51	64	29	34	41	31
34	69	75	64	73	72	78	54	59	56	67	32	38	25	22
41	70	78	66	74	72	71	58	65	62	64	37	44	18	17
56	71	78	76	72	70	63	58	74	60	58	38	45	15	24
51	73	68	62	71	64	63	67	77	48	47	48	48	31	29
57	55	60	61	73	55	62	67	76	43	50	38	40	17	15
59	52	73	65	70	57	63	73	78	43	51	32	30	9	17
63	54	55	69	68	66	69	78	73	47	55	31	32	13	19
58	52	71	72	72	62	78	63	63	49	59	33	36	20	18
68	62	56	68	78	74	78	58	58	60	55	35	36	8	16
74	61	55	77	78	73	71	56	66	52	54	33	32	26	31
76	58	80	66	72	68	78	58	71	51	51	33	35	34	36
66	61	75	70	72	66	70	61	73	49	45	31	34	29	25
68	75	80	68	72	66	73	65	74	42	47	32	33	20	18
66	72	65	70	82	63	74	67	72	46	53	31	32	15	25
56	64	66	76	81	69	71	65	73	48	45	29	31	32	34
51	60	75	73	85	68	67	68	67	39	46	34	43	34	35
58	64	78	74	79	69	77	68	67	45	41	38	34	32	33
52	67	70	70	84	72	80	65	77	41	39	30	41	27	28
55	60	72	70	77	79	82	72	80	38	40	55	47	25	26
56	68	69	74	75	77	67	68	66	34	45	39	34	24	28
60	70	67	65	76	66	73	61	62	44	44	26	31	32	45
64	68	71	65	75	65	76	63	65	42	50	35	39	31	28
75	66	80	67	76	65	79	62	68	43	39	32	29	24	28
78	67	69	75	83	71	73	66	70	36	38	18	21	28	35
68	57	71	76	79	60	77	71	58	32	39	20	27	36	37
61	67	73	81	82	60	73	51	47	31	30	30	25	34	35
54	73	84	72	68	70	78	43	48	31	35	33	30	36	36
59	71	75	76	74	74	71	50	60	37	40	30	34	37	36
63	76	72	64	73	63	66	52	60	34	34	42	46	34	38
80	....	....	65	74	54	55	....	....	32	32	....	....	37	37

THERMOMETER.

1870.

DATE.	JANUARY.		FEBRUARY.		MARCH.		APRIL.		MAY.		JUNE.		JULY.		AUGUST.		SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.	
	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.	8 A.M.	7 P.M.
1..	30	38	29	20	29	29	41	48	54	57	69	74	60	70	78	78	68	76	62	60	43	46	28	42
2..	36	47	18	28	25	21	40	48	49	63	72	78	64	73	79	75	71	64	57	64	47	55	37	43
3..	37	34	17	10	16	16	39	42	56	63	74	77	68	75	70	75	71	73	57	56	58	46	35	35
4..	30	32	3	8	14	19	33	35	60	60	73	80	66	80	72	71	71	65	58	68	40	45	36	43
5..	27	27	8	23	18	24	37	45	51	63	74	82	68	80	75	76	66	67	56	55	42	47	37	43
6..	30	33	24	26	22	36	36	38	53	64	75	72	75	82	78	82	62	66	55	54	34	38	43	39
7..	20	20	18	26	17	30	41	46	54	55	73	70	80	82	79	83	64	68	52	55	35	39	37	39
8..	21	20	26	26	31	28	40	50	56	60	72	78	72	76	79	83	62	66	49	55	36	50	38	38
9..	15	11	26	26	28	28	42	54	57	55	75	78	65	76	84	75	66	67	47	52	55	50	35	33
10..	20	26	27	29	28	28	42	55	54	52	71	68	74	79	76	78	61	64	49	56	41	37	30	29
11..	31	36	13	28	15	19	48	46	49	51	62	68	78	78	74	79	57	58	55	64	35	37	27	30
12..	37	40	33	30	16	18	48	48	51	57	66	80	76	78	75	78	55	60	63	64	34	43	39	40
13..	29	9	17	14	23	24	41	55	54	59	74	76	83	81	72	66	54	64	56	56	39	45	38	41
14..	2	11	24	35	32	28	52	63	63	70	77	80	79	76	65	70	55	66	54	54	40	43	39	37
15..	27	36	37	36	15	29	58	55	64	78	72	71	76	76	70	70	62	69	47	60	36	35	29	24
16..	37	31	26	29	35	25	48	50	64	71	71	76	76	78	66	71	65	68	54	63	30	36	19	23
17..	36	28	20	38	23	31	44	50	58	63	72	80	78	80	72	76	62	66	56	61	32	36	22	30
18..	30	33	40	34	31	30	57	52	61	65	73	81	80	81	78	80	64	66	60	47	34	34	28	28
19..	25	25	18	18	24	30	50	50	60	73	75	83	81	82	77	83	60	61	40	47	30	31	19	23
20..	24	33	18	33	26	38	46	50	68	72	78	65	78	78	75	70	57	66	47	54	34	39	33	34
21..	36	30	15	11	39	37	48	43	67	50	63	63	81	73	70	68	61	66	47	50	39	36	33	21
22..	23	36	11	16	39	36	45	53	50	60	59	69	78	80	66	69	60	68	45	50	29	32	17	17
23..	44	41	12	21	33	31	53	63	59	62	70	78	80	84	65	67	64	70	43	49	41	40	13	17
24..	31	25	17	16	26	25	51	66	66	66	74	82	84	86	67	69	65	70	46	59	33	39	15	15
25..	29	34	7	20	18	28	42	54	62	64	80	85	84	82	70	73	67	64	55	64	41	40	10	17
26..	31	38	17	25	21	35	46	57	57	63	80	76	84	82	67	64	56	63	45	34	35	40	21	25
27..	35	31	20	24	35	40	51	67	59	70	78	83	76	78	59	65	59	63	35	41	37	46	19	24
28..	25	28	26	30	40	38	63	53	58	64	83	86	73	76	57	68	59	64	49	46	41	44	26	23
29..	31	33	....	....	36	40	46	54	64	65	76	83	76	76	69	78	58	65	43	40	41	38	6	5
30..	32	31	....	....	38	45	46	59	64	72	77	83	74	73	72	68	62	60	34	42	32	36	3	19
31..	25	29	....	....	39	46	....	....	69	73	....	....	76	76	68	70	....	....	47	42	....	....	30	33

MEANS OF THE THERMOMETER.

TWO READINGS DAILY.

MONTH.	1862.		1863.		1864.		1865.		1866.	
	8 A. M.	7 P. M.	8 A. M.	7 P. M.	8 A. M.	7 P. M.	8 A. M.	7 P. M.	8 A. M.	7 P. M.
	°	°	°	°	°	°	°	°	°	°
January .	22.4*	25.2*	25.2	28.8	21.2	25.1	15.0	19.1	16.6	20.1
February.	18.4	23.9	20.1	25.0	25.2	28.6	18.8	24.5	22.7	26.7
March ...	28.8	32.3	21.1	28.1	28.8	34.8	34.2	39.1	29.4	31.9
April	39.3	45.3	39.8	47.5	40.1	47.2	43.3	51.6	46.3	52.6
May......	53.6	59.4	54.5	64.4	57.7	67.9	52.9	62.2	53.7	58.6
June.....	60.3	65.7	60.0	70.9	62.7	76.0	67.6	76.8	65.6	70.2
July	69.2	71.5	69.5	77.5	68.7	82.1	66.6	76.7	73.2	80.1
August ..	67.6	71.5	66.3	75.3	68.7	75.3	65.3	74.7	63.7	68.4
Septemb'r	60.1	65.1	54.2	62.4	55.4	61.4	61.5	69.8	58.8	62.2
October ..	46.8	51.7	45.1	50.9	43.6	48.1	42.3	47.0	48.1	52.3
November	34.9	38.3	37.8	40.9	35.2	39.0	35.7	39.8	38.4	41.6
December	26.3	28.5	22.6	25.4	25.4	27.8	28.1	31.2	23.0	25.5
Annual mean..	46.1		46.5		47.8		47.7		47.1	

MEANS OF THE THERMOMETER—TWO READINGS DAILY.

MONTH.	1867.		1868.		1869.		1870.		Mean.
	8 A. M.	7 P. M.	8 A. M.	7 P. M.	8 A. M.	7 P. M.	8 A. M.	7 P. M.	
	°	°	°	°	°	°	°	°	°
January	13.4	17.0	16.3	16.0	23.4	27.4	28.6	29.9	21.7
February.........	28.8	31.5	11.8	18.1	24.4	27.0	20.2	24.3	23.3
March............	29.1	32.1	30.7	36.4	24.4	28.0	26.5	30.1	30.3
April............	42.6	48.3	39.3	42.7	42.6	48.0	45.8	51.6	45.2
May..............	52.5	56.3	54.8	60.0	55.2	60.2	58.4	63.2	58.1
June	68.5	75.9	65.9	74.5	65.2	71.1	72.9	77.2	69.3
July	69.6	75.5	77.1	82.3	69.5	75.2	75.6	78.5	74.3
August	69.5	74.9	69.6	73.4	67.0	72.1	71.7	73.5	70.5
September	58.4	64.1	58.1	60.9	62.0	64.6	62.1	65.8	61.5
October	45.8	51.9	43.0	46.6	44.1	47.0	50.4	53.6	47.7
November.........	36.1	38.8	34.7	37.2	33.5	35.5	38.5	40.8	37.6
December	19.5	21.8	20.4	22.7	26.6	28.4	27.2	29.3	25.5
Annual mean...	46.8		45.6		46.8		49.9		47.1

* January, 1862, was not complete.

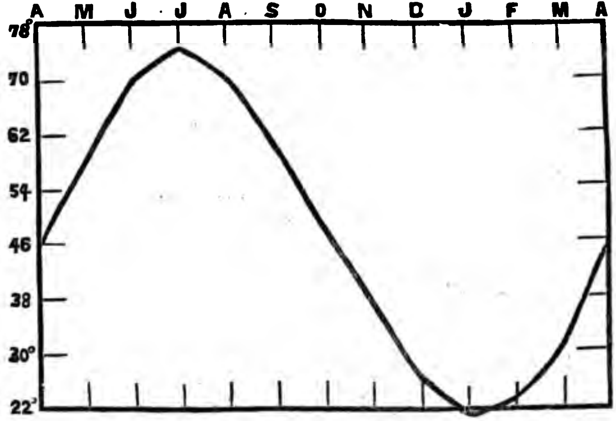
MEAN TEMPERATURE OF THE SEASONS,

FROM BI-DAILY READINGS.

YEAR.	Spring.	Summer.	Autumn.	Winter.
	°	°	°	°
1862	48.1	67.7	49.5	23.5
1863	42.6	70.0	48.5	25.6
1864	46.1	72.2	47.1	24.7
1865	47.2	71.3	49.3	21.8
1866	45.4	70.2	50.2	24.2
1867	43.5	72.2	49.2	23.2
1868	44.0	73.8	46.7	17.3
1869	43.1	70.0	47.8	24.2
1870	45.9	74.9	51.9	25.8
Mean	44.5	71.8	48.9	23.4

MEAN MONTHLY TEMPERATURE FOR NINE YEARS, FROM 1862 TO 1871.

FIG. 1.



The diagram, Fig. 1, shows, in the form of a curve, the mean monthly temperature, deduced from readings made at 8 A. M. and 7 P. M., daily.

The maximum monthly temperature occurs in July, and the minimum in January.

THE WEATHER SHEETS.

At the end of the volume will be found thirty-six lithograph sheets, exhibiting the indications of the different instruments, and the state of the weather for every hour, during a period of three years, from January 1st, 1868, to January 1st, 1871.

The barometer curve was plotted from the hourly printed records, and shows the absolute time of maxima and minima, as well as the height for intermediate points.

The thermometer curves for 1868 and 1869 have been plotted from two daily readings, made at 8 A. M. and 7 P. M. For 1870, the first eight months are deduced from three daily readings, at 8 A. M., noon, and at 7 P. M. For the last four months, from September first, the record was

EXPLANATION OF THE WEATHER SHEETS.

Each sheet extends over a period of one month. The numbers at the top of the sheet indicate the date, and each vertical line, noon of each day.

The black bars projecting from the top of the sheet downward, indicate rain or snow. The scale showing the amount of rain-fall will be found at the upper right hand margin. The space between any two contiguous parallel lines representing $0^{in}.25$.

The snow has been converted into its equivalent of water, and is marked with the letter S, at the bottom of the bar.

The upper curve is the record of the barometer, the scale of height for which will be found at the upper left hand margin; the space between any two contiguous parallel lines being equivalent to $0^{in}.10$ pressure.

The second curve is the record of the thermometer, the scale for which will be found on the left hand margin; the heavy horizontal line near the bottom of the sheet representing zero, Fahrenheit; the space between any two contiguous parallel lines being equivalent to four degrees.

It may be proper to remark, that the same zero points are used throughout the whole series of records. Hence, the height of the barometer, thermometer, etc., may be seen at a glance.

The curve near the bottom of the sheet represents the hourly velocity of the wind in miles, the scale for which will be found on the lower left hand margin; the space between any two contiguous parallel lines being equivalent to five miles of wind per hour.

The direction of the wind is indicated at the bottom of the sheet to eight principal points.

An examination of the [illegible] show the occurrence of gales of wind as follows [illegible] 2[illegible] [illegible] 7th and 9th, March 6th, and October 27th, 1868, maximum hourly velocity forty miles.

February 23d, April 20th, 22d, and 23d, maximum hourly velocity forty-one miles. November 20th, 1868, maximum hourly velocity fifty-five miles.

March 16th, 1870, maximum hourly velocity fifty-two miles. June 9th, maximum hourly velocity forty-five miles. November 3d, and 9th, maximum hourly velocity forty miles.

The gale of June 9th, 1870, occurred without any change in the height of the barometer, but was preceded by a slight rise of the thermometer, and followed by a considerable depression of the temperature.

A great rain-storm occurred Nov. 3d, 1869, when the total fall of water during twenty-four hours was six inches; previous to and during the storm, the barometer fell nearly one inch.

The thermometer fell below zero, Fahrenheit, at 8 A. M. on the following dates: Feb. 2d, 7th, 10th, 11th, 21st, and 22d, 1868. It rose above 90° at 7 P. M. on June 19th, July 4th, 11th, 13th, 14th, and 15th, 1868. It rose above 90° at noon on June 4th, 9th, 18th, 19th, 24th, 25th, 26th, 27th, 28th, 29th, and 30th, July 24th, August 7th, and 9th, 1870.

An examination of these sheets shows the intimate relation existing between temperature, pressure, rain-fall, and the direction and velocity of the wind.

It is seen at a glance, that the barometer and thermometer curves almost invariably move in opposite directions. When the barometer rises, the thermometer falls, and *vice versa.*

The curve showing the velocity of the wind very generally follows that given by the thermometer.

The barometer almost invariably falls under a south wind, and rises under a west wind.

From a careful study of these curves, it is believed much useful information may be acquired.

APPENDIX.

BOARD OF TRUSTEES.

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REMARKS ON THE GALVANIC BATTERY.

The constant use of Daniell's battery for nearly ten years, made us desirous of more fully understanding the mode of its action, and the cause of the decline in the strength of the electric current. For this purpose, during the past year, a series of experiments were instituted, with batteries of various forms. As they were undertaken solely for the purpose of securing the best form of battery for every day use, delicate instruments were not provided, and consequently great precision of measurement could not be obtained.

The Galvanometer consisted of a steel needle, one and a half inches in length, attached to a light strip of brass, having a radius of five inches. This needle was mounted horizontally over a coil of silk-covered copper wire. The graduation of the instrument was effected by two methods, viz.: by means of the divided current, and by the revolving disk.

The Rheostat was constructed by winding No. 30 silk-covered wire around a wooden cylinder, 10 inches in circumference and 8 inches in length. The coils were separated in different group, and so connected with switches that any number could readily be introduced in the circuit.

For measuring the comparative resistance of different liquids, two small platinum plates, attached to protected wires, were fastened to a block of wood, and maintained at a uniform distance from each other.

DANIELL'S BATTERY.

The battery originally constructed by Daniell, consisted of a copper cylinder, 6 inches high and 3½ inches in diameter, with a porous cell or ox-gullet passing through the center, in which was suspended a rod of zinc, 6 inches in length and ½ inch in diameter. The porous cell passed through the bottom of the copper cylinder, and the end was connected with a glass siphon, bent in such a manner that the top was on a level with the surface of the liquid. The battery was excited with a saturated solution of sulphate of copper and water, acidulated with sulphuric acid. When fresh water and acid were poured in the top of the porous cell, an equal amount of liquid was forced out from the bottom through the siphon. It was intended by this arrangement to maintain at all times the same strength of acidulated water about the zinc. After this battery came in general use, porous clay cells were substituted for the membranous bag, and the siphon was discarded.

HILL'S BATTERY.

As many of our experiments were made with Hill's modification of Daniell's battery, a description of its peculiarity is deemed necessary. This battery consists of a glass jar, with a sheet of copper placed in the bottom, and a disk of zinc, perforated in the center, suspended horizontally near the top. Protected copper wires are attached to the zinc and copper, forming the two poles of the battery. When thus arranged, the jar is filled with a solution of *s. z.*,* after which a few crystals of *s. c.* are dropped in through the orifice in the zinc, and lie on the copper plate. If the liquid is not agitated, the copper will lie in a solution of *s. c.*, and the zinc in a solution of *s. z.*, so long as the specific gravity of the latter is less than 36° B. The intervening liquid *s. z.*, acts as a protection in the same manner as the porous cell in Daniell's battery.

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* The following abbreviations are used: *q.* quantity of electricity flowing in the external circuit; *s. c.* sulphate of copper; *s. z.* sulphate of zinc.

THE FORMATION OF SULPHATE OF ZINC.

As soon as the poles of the battery are joined, *s. z.* is formed in the cell containing the zinc, and metallic copper is deposited on the copper plate. A long series of experiments were instituted to determine the rate of formation of the *s. z.* during the various conditions of the battery. A Hill's element, was put on a closed circuit through the galvanometer, without any external resistance, and the specific gravity of the *s. z.* was measured daily, by means of a Baumé hydrometer. The indications of the galvanometer needle and the temperature, was also ascertained at the same time. The jar containing the liquid, was 7 inches high and 6 inches in diameter. The zinc and copper plates each presented a surface of 28 square inches. The distance between the plates was 5½ inches. The battery was started with *s. z.* at 21° B. specific gravity. This element was on a closed circuit for 30 days; at the end of that time the *s. z.* was nearly saturated, 43° B., temperature 50°, and *q.* had decreased to only ¼ of its normal value. For the first 23 days, or while the specific gravity of the *s. z.* was less 40° B., *q.* was sensibly the same from day to day.

It is a fundamental principle that the formation of *s. z.* is directly proportional to the quantity of electricity passing in the circuit. This would be strictly true, provided there was no local action; but actual experience demonstrates that this condition is never fulfilled. On laying down the daily results in the form of a curve, having the specific gravity of the *s. z.* for one ordinate, and the time for the other, it was found that the observations could be well represented by an equation of the second degree, in which $\Delta_1 = +1{\cdot}46°$, and $\Delta_2 = -0{\cdot}08°$. For this element, the amount of liquid saturated with *s. z.*

between the limits 12° to 40° B., was 3·6 cubic inches daily. A second element of the same size, in which the distance between the plates was reduced to 4 inches, gave similar results. But the amount of liquid saturated daily was nearly twice as great, with but a small increase in the quantity of electricity generated; showing a much greater local action.

The experiments with a Daniell's element of the usual size, using a porous cell, 2½ inches in diameter and 7 inches high, gave 5·7 cubic inches for the amount of liquid saturated daily, during the normal condition of the element. As *q*. was nearly double that of Hill's element, and the amount of liquid saturated less in proportion, it shows less local action. From these experiments it follows, that once having determined *q*., the length of time the battery will maintain the current at its normal force can readily be computed; since it depends entirely on the capacity of the cell holding the sulphate of zinc. With a porous cell of the usual size, when no external resistance is introduced, the battery will begin to decrease at the end of three days, and at the end of five days there will be scarcely any action. On the contrary, with Hill's element, of the size before described, *q*. will continue uniform for more than thirty days, and will be but little less at the end of fifty days. Most of the writers on galvanism seem to imagine that sulphuric acid is essential for exciting the battery, but our experiments show that this is not the case; in fact we consider it a detriment; for if too great a quantity is used, crystals of sulphate of zinc are deposited on the zinc, thereby greatly lessening *q*. It seems to me that the only office of the sulphuric acid, is to make the water a better conductor; since nitric acid, muriatic acid, salt, sulphate of copper, or sulphate of zinc, will answer equally well. By using a solution of *s. z.* of a certain specific gravity, the same quantity and electro-motive force is obtained as with sulphuric acid. This is also true for Grove's, and the bi-chromate of potash battery.

THE USE OF A NUMBER OF POROUS CELLS IN THE SAME JAR.

Since the decrease of *q.* is due to the formation of *s. z.*, the question naturally arises, how can a battery be constructed, that will give a uniform current for a long period of time? The answer is plain; we must increase the capacity of the cell in which the zinc is placed.

In a two-gallon stone jar, three porous cells were placed with a sheet of copper surrounding them. The current was then passed through the galvanometer and rheostat, and sufficient resistance inserted to make *q.* equal to that due to single cell, when used alone. The amount of *s. z.* formed in a given time was then measured, when it was found each cell made as much *s. z.* as if only a single one had been employed. This combination showed very great local action. Nothing, therefore, would be gained by such an arrangement, but on the contrary a much greater amount of zinc would be consumed without advantage.

We next had constructed large porous cells 6 inches in diameter and 7 inches high, having a capacity of 180 cubic inches. Our previous experiments enable us to calculate with considerable precision, the length of time one of these elements will maintain a maximum current of electricity. Allowing 5·7 cubic inches for the amount of liquid saturated daily between the limits 12° to 40°, it is apparent that a battery of this size should remain constant for more than thirty days, without any external resistance being introduced in the circuit. When electro-magnets are operated, as the external resistance should at least be equal to that of the battery, the current would remain constant for more than two months, on a continually closed circuit.

THE RELATION BETWEEN THE QUANTITY OF ELECTRICIT AND THE SPECIFIC GRAVITY OF THE SULPHATE OF ZINC.

Svanberg's experiments are quoted by recent writers t prove that the electro-motive force for Daniell's battery is no materially changed by the nature of the liquid about th zinc. Although this statement is strictly true, yet it does no give us correct views in regard to the battery. We prepare different solutions of *s. z.*, ranging from zero to saturation These were alternately used in the porous cell, and *q.* measured by the galvanometer. The time for each experimen was about five minutes. Above the specific gravity of 15° B. *q.* was sensibly the same up to saturation. These result were so directly contrary to all our experience with the battery in actual use, that at first we were at a loss to understand them. The experiments were accordingly continued, by putting an element on a closed circuit through the galvanometer. The quantity of electricity and the specific gravity of the *s. z.* were noted from time to time. So soon as the *s. z.* approached near saturation, from 43° to 46° B., depending on the tempeappear to have been investigated. After an element has been on a closed circuit for a long time, if the circuit be opened for a few minutes, on closing it, the galvanometer will at first indicate the maximum quantity due to the element, but in a few seconds the needle will gradually recede and stand as before. It appears that when the specific gravity of the *s. z.* approaches saturation, it becomes charged with electricity, like a Leyden jar or prime conductor. From numerous experiments, we find *q.* reaches its maximum when the specific gravity of the *s. z.* is between 20° and 30° B. However, for practical purposes, the battery gives essentially the same force between 15° and 38° B. Below 15° B. the conducting power of the *s. z.* is considerably less, and consequently the resistance greater; and above 38° B. the resistance is again increased by polarization. The conducting power of *s. z.* was found to be essentially the same between 30° B. and saturation. At 1° B. it was one-fourth, at 7° one-half, and at 14° three-fourths as great as for a saturated solution.

ON THE USE OF THE NEGATIVE METAL IN DANIELL'S BATTERY.

The negative metal in Daniell's battery is only useful as a conductor of the current. For the purpose of testing the correctness of this conclusion, experiments were made with the following metals as the negative plate: 1, copper; 2, sheet lead; 3, sheet iron; 4, sheet iron tinned (the ordinary sheet tin); 5, sheet zinc; 6, cast zinc.

The *s. c.* was a saturated solution, and the *s. z.* had a specific gravity of 25° B. The quantity of electricity and the electro-motive force was found to be the same for copper, lead, iron and tin. When zinc was used for both the positive and negative metal, the action was somewhat different. For two or three seconds after immersion in the *s. c.* there was a small negative current, after which the galvanometer needle was gradually deflected until it indicated a quantity of electricity nearly equal to the normal condition of the element. It then remained at rest for a few seconds, after which it receded and stood at a degree indicating about one-half the quantity. The whole time required to bring it to rest, was three minutes from the time of immersion. During the progress of the experiment, the hydrogen was evolved so rapidly from the zinc immersed in the *s. c.*, that the bubbles could be exploded by holding a lighted match near the surface of the liquid. As soon, however, as the galvanometer came to rest, the evolution of hydrogen had nearly ceased. On removing the zinc, it was found covered with a loose copper powder; not reguline metal,. but such as is deposited when a large battery is employed to act on a small surface. This powder did not adhere closely to the zinc, but was separated by a thin layer of *s. z.* or hydrogen. On washing the zinc and repeating the experiment, precisely similar results were obtained. Although the zinc was capable of conducting the maximum quantity of electricity, yet the electro-motive force was considerably less than for the other metals. A careful examination of these experiments, leads us to the conclusion that the negative metal in Daniell's battery, only acts as a conductor of the electricity.

ON THE INTERNAL RESISTANCE OF THE BATTERY.

In a battery with two liquids, the internal resistance is made up of two elements, viz. : the specific resistance of the liquid, and the resistance of the porous cell. Although recent writers have remarked the variation of resistance due to different kinds of earthern cells, yet we have not learned that any one has determined separately the resistance due to the cell, and that due to the liquids. By our method, it is necessary to use at least two cells of different size. In these experiments, three were employed:

No. 1. White clay cell, 0·31 inches in thickness, 6 inches in diameter, and 7 inches high.

No. 2. White clay cell, 0·15 inches in thickness, 3 inches in diameter, and 7 inches high.

No. 3. Split-leather cell, 0·06 inches in thickness, 5 inches in diameter, and 7 inches high, fitted to a bottom of inch pine.

The resistance of the element was determined for each cell separately. Then the cells were placed one inside of the other, and the total resistance determined as before; after which it was found for two at a time. These several determinations gave us a series of equations, involving the resistance of each separate cell, together with the specific resistance of the liquids. The following are the results, expressed in an arbitrary unit:

No. 1. Resistance, 22. No. 2. Resistance, 17. No. 3. Resistance, 7. Specific resistance of the liquids *s. c.* saturated solution, *s. z.* 25° B., 13. From which it appears that the specific resistance of the liquids is about the same as for a white clay cell of the ordinary size.

As *q.* is increased by lessening the interval resistance, other things being equal, it is apparent that the leather cells are superior to those made of white clay.

ON THE CONSTRUCTION OF DANIELL'S BATTERY.

For a local battery, where the external resistance is small, two-gallon stone jars may be used for the vessel holding the *s. c.* solution. The negative plate is best made of sheet lead, instead of copper as heretofore; as it is less expensive and is easier bent in the proper form. It is desirable to perforate the sheet with an ordinary punch, in order to secure a more free circulation of the liquid surrounding it. Ordinary sheet tin makes the cheapest negative plate, but it is unfit for general use, where the battery is required to be kept in constant action for a long period. For if the *s. c.* solution is not

kept saturated, chemical action takes place b
and tin, which soon dissolves the plates. I
used it successfully. If the solution is kept
month or so the sheet will be covered with
copper, which may be easily separated, provid
plate has been properly prepared, by being oil
beaded before being used. The porous cell in
is placed, should have a capacity of at least 15
As the resistance of large clay cells is more th
as great as for those made of leather, the latter
since, with the same surface of zinc, *q*. is n
The constant use of leather cells, during the p
demonstrates their superiority over those made
For it is found in practice that for working ma
are used in telegraph offices for local sounders,
as described above, gives more effective workin
two of those in ordinary use. The zinc castin
any form; for cells of this size, it should have
surface of 50 square inches.

The zinc need not be amalgamated, but it should be cleaned once in two or three months, and all the sediment removed from the porous cell.

When the specific gravity of the *s. z.* approaches 40° B., one-half of the liquid should be removed, and fresh water added. It is always best, however, to keep the specific gravity of the *s. z.* between the limits 15° to 38° B.

If Hill's form of battery is employed, a jar of the same size may be used. With plates of 50 square inches each, placed at a distance of five inches from each other, *q.* is the same as for a Daniell's element of the ordinary size. The negative plate may be made of sheet lead, having a protected copper wire firmly attached to it. The zinc should be cast with an opening in the center, of one and one-half inches in diameter. Iron bars, for supporting it near the top of the jar, can be cast in the zinc. This battery should be started with a solution of *s. z.* having a specific gravity 15° B. The *s. c.* is dropped in through the orifice in the zinc plate. The battery should be examined occasionally with the hydrometer, and the specific gravity of the liquid never allowed to become greater than 36° B.

a little shorter than when running at the Observatory. On its return, after being cleaned, it was again set up, when the rate was found to be essentially the same as at Mattoon.

TIME.

To Mr. Orton, the president, and General Anson Stager, superintendent of the Western Union Telegraph Company, we are especially under obligations for putting a continuous line of telegraph wire, of nearly one thousand miles in length, at our disposal, for the purpose of securing time from the Dudley Observatory. Our thanks are also due to the managers of the following offices, all of whom were interested in the success of the work: Mr. C. S. Jones, manager of the Albany office; Messrs. Hucker and Slacer, Buffalo; Messrs. Wright and Tindall, Cleveland; Messrs. Armstrong and Warren, Cincinnati; Mr. J. F. Wallack, Indianapolis; Mr. Patten, of Mattoon. The necessary connections at the Dudley Observatory were made by Mr. Thomas E. McClure and Mr. H. L. Foreman.

A continuous circuit was secured on the nights of the 5th and 7th, when the Dudley Observatory sidereal and mean time clocks were compared with the clock and chronometer at Mattoon.

The mean daily rate of the clock was found to be 15·34 seconds slow. As the last comparison with the Dudley Observatory time was only five hours after the eclipse, it is presumed the time was very accurately determined.

CHRONOGRAPH.

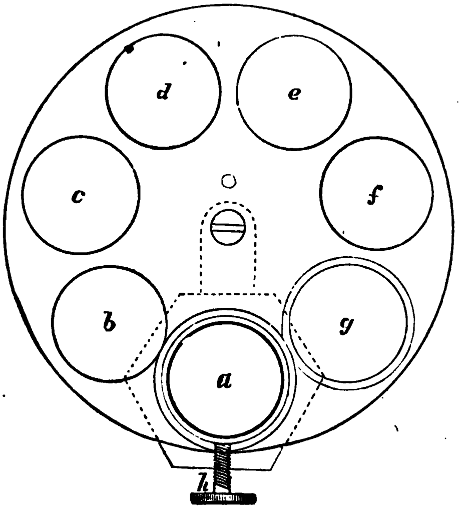
The chronograph used for the eclipse observations was of the cylinder form, and was constructed expressly for this purpose. The cylinder was six inches in length and ten inches in diameter, driven by clock work regulated by the Frauenhofer friction balls. For securing a motion of stable equilibrium, an escapement, held by a light spring, was connected with the shaft next to the friction balls, which was regulated by a magnet beating every two seconds, by opening and closing the circuit with the pendulum of the clock. The sheets were previously ruled for every minute, and the clock dots were recorded every two seconds. A second pen was employed for recording the observations. The connections were so arranged on the clock, that at the end of every minute, the clock pen recorded in addition the sixty-first second, thereby giving the zero of the clock with absolute certainty; the whole mechanism performing in a very satisfactory manner. In order to enable more than one observer to use the chronograph during the progress of the eclipse, wires were connected with the clock pen and battery, so that observations could also be recorded with it. It was so used by Mr. Lewis Swift.

Another set of wires were connected with a battery and local sounder-magnet, placed near the observers. This magnet gave the clock beats for every two seconds and the extra beat at the sixty-first second, by making connection through the clock pen, causing it to act as a repeater.

THE TELESCOPE.

The telescope employed by myself was the Comet-seeker, made by Alvan Clark. The focal length is three feet six inches, and the objective four inches clear aperture. A parallel wire micrometer and position circle, divided to degrees, were constructed for this work; there was one fixed vertical and one horizontal wire, and three movable micrometer wires. The eye-piece holder was so constructed, that the eye-pieces belonging to the transit instrument could be used. A brass tube, held in position by a set-screw, was fitted over the eye-piece, to which was attached a disc of brass, three and a quarter inches in diameter, in which was set six plates of glass of different colors and density.

This apparatus is here represented, on a scale two-thirds the full size. The colored glasses are marked *b*, *c*, *d*, *e*, *f* and *g*. The latter was provided with a cap, for holding a double or triple glass. The position of the eye-piece is at *a*. When in the position here represented, no colored glass is over the eye-piece. The set-screw, for clamping to the eye-piece tube, is at *h*. In order to bring any one of the colored glasses over the eye-piece, the plate is revolved about the center *o*. By this arrangement, any color can almost instantly be brought before the eye. It has been surmised, from the observations of previous eclipses, that perhaps the color of the glass used might materially modify the phenomena. This apparatus was constructed for the purpose of testing it. It may here be stated, that the color of the glass had no apreciable effect on the character of the phenomena. For the observations during totality, no colored glass was used.



For regulating the aperture of the objective, holes of one, two, three and four inches in diameter were cut in a disk of thick card board. This was firmly screwed to a block, and made to revolve in front of the objective, by means of a hand rod attached to the side of the telescope tube. A spring dog, dropping in a notch, always brought the opening over the center of the objective.

The telescope was equatorially mounted, with hand rods for giving slow motion in right ascension and declination. A day or two previous to the eclipse, three posts were firmly set in the ground for the observing stand. The telescope was brought in the meridian and appropriately adjusted for the latitude of the place, by observations on the sun, made some time previous to the beginning of the eclipse. The eye-piece used during the eclipse gave a power of 44.

THE WEATHER.

The night preceding the day of the eclipse was one of unusual anxiety to the observers, from the fact, that about six o'clock it began to rain, and continued almost without intermission until 11 P. M. In order to learn the worst, we went to the telegraph office and asked for weather reports from west and east. At nearly all the stations from which reports were received, extending from Omaha to Cincinnati, it was rainy or cloudy. These reports led us to expect a storm extending over a large area of territory; and it was presumed that it would be a day or two in passing over. But fortunately our prognostics were in error, for at 11 o'clock P. M. the rain ceased, and stars began to make their appearance. The morning of the 7th was clear, with not a cloud to be seen ; and it so continued during the whole day and subsequent night. It was one of those rare days but seldom seen in this climate; the atmospheric disturbance being at a minimum.

THE ECLIPSE.

One hour before the beginning of the eclipse, observations were made on the solar spots, and their position and magnitude mapped on a diagram prepared for the purpose. As the time drew near for the first contact of the moon's limb, each observer examined carefully the region where the moon was expected, to see whether it would be visible before contact with the solar disk. The closest scrutiny of five observers failed to discover it.

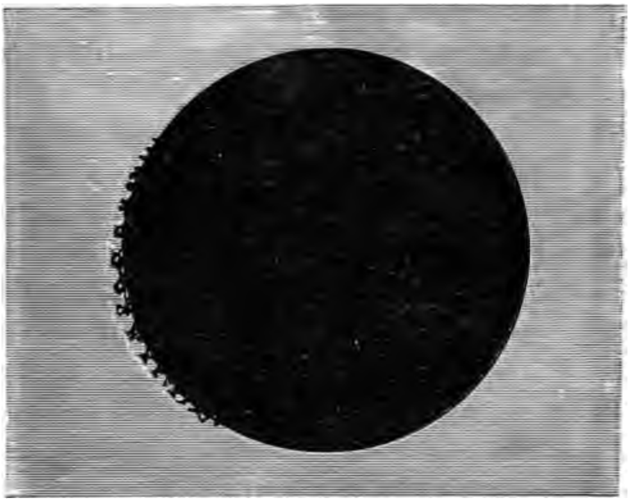
At ten seconds before the true contact of the limbs, a lunar mountain, distant 8 or 10 degrees north of the contact point, plunged into the solar disk, and was recorded on the chronograph. The true contact of the limbs was well observed by all, and at nearly the same instant. The moon's limb, instead of appearing round, as it should, was nearly flat and a little notched, showing a mountainous region. As the eclipse advanced, observations were made by means of the micrometer and chronograph, to determine the relative position of the two bodies. When the sun was about one-half eclipsed, a red band of light was seen surrounding the limb of the moon over the solar disk. Later, during the progress of the phenomenon, tails of light were seen projecting out tangent to the moon's limb, and extending 15 or 20 degrees along the edge.

As the crescent of solar light grew less and less, every eye was intently watching for any unusual appearance. Nearly a minute before totality, we saw with wonder a red flame suddenly shoot out from the upper edge of the moon, and, shortly after, the remarkable and beautiful phenomenon of Bailey's beads. The slender crescent of light was suddenly broken up in numerous globules, resembling drops of water flowing together, or a string of beads. One observer compared it to a chain of sausages of unequal lengths.

This peculiar breaking up of the solar crescent was noticed by Bailey in 1836. But during subsequent eclipses it has not generally been seen. This fact has led some of the ablest astronomers to doubt its reality, believing it to be an optical illusion.

The accompanying wood cut is intended to represent the appearance of this phenomenon, but it can only be regarded as an approximate illustration.

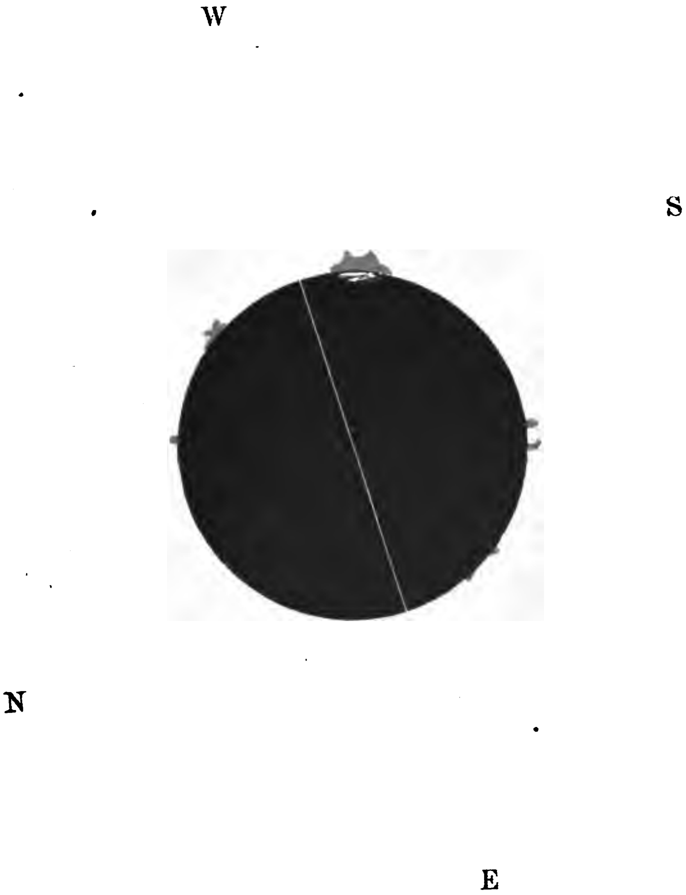
At Mattoon, the appearance was distinctly seen by all the observers, and its duration recorded on the chronograph by Mr. Swift and myself. That the phenomena is real, we have no doubt. It is well known that the limb of the moon is exceedingly rough and jagged, with mountains projecting to a great height. Now it is reasonable to suppose, that when this mountainous limb of the moon cuts off the slender crescent of light, it must be more or less broken up in sections, depending on the irregularities of the surface and the position of the observer. We were more strengthened in this opinion, since, previous to the first contact, Mr. Swift saw five mountain peaks on the moon, and he reported the beads the most conspicuous in the region toward this part of the lunar disk.



The duration of Bailey's beads was accurately recorded on the chronograph, by Mr. Swift and myself, and found to be five and one-half seconds. This is the first exact record ever made for the duration of the phenomena.

As the light grew less and less, suddenly the sun se
dart under the black disk of the moon, producing
of chilliness. Now was seen in all its splendor, the l
protuberance sitting on the edge of the moon, and ap
very much like a great ship under full sail. Farthe
left was another, nearly as large, with two bent ray
what resembling the antlers of a deer. Five others, n
as large, were seen on different parts of the disk, all o
red color.

After looking with astonishment for a few secon
proceeded to measure, with the micrometer, the heig
position of the largest flame. But just at the critical m
fortunately or unfortunately, one of the hand rods for
the telescope came off, and it was necessary to remove
from the tube to fix it. On looking up, one of the gr
spectacles met the eye of which it is possible to co
Surrounding the dark body of the moon was a crown o
with rays shooting out in five great sheaths, to a d
equal to the sun's diameter, or nearly a million of



TOTAL ECLIPSE, AUGUST 7TH, 1869.

Observed at Mattoon, Illinois.

disk of the sun. The drawing represents the sun as seen through an inverting telescope. The line across the disk of the moon, is the projection of the earth's equator. Owing to the difficulty of representing by any drawing a phenomenon of this kind, no great degree of precision is attainable.

A sketch of the corona was made during the time of totality, by Mr. Bostwick, of Mattoon, and General Keifer, of Springfield, Ohio, and is presumed to be a pretty faithful representation of the position and magnitude of the rays.

Prof. David Murray, at my request, prepared a paper on the physical phenomena, which is here appended.

PHYSICAL PHENOMENA.

"The peculiar phenomena which have attracted so much attention in solar eclipses, are only visible during the brief period of totality. This, in the present case, only extended through two minutes and forty-two seconds. The difficulty of observing them lies in this exceeding brevity, and in the fact, that no matter how much the observer may have studied the experiences of others, the phenomena come upon him as a complete surprise. The moment the last ray of light disappears with the extinguishment of Bailey's beads, there bursts upon him a vision so marvelously beautiful, so startling by its novelty, that his self-possession and self-control desert him, and leaves him for an instant a helpless gazer. As soon as he can collect his thoughts and tries to marshal them into order, he will find especially two phenomena of notable interest:

1. *he Corona.*

"In immediate contact with the solar disk, it appears as
a clear silvery light, as ht as the brightest part of an
ling it in consistency. Farther
ncils radiating in the direction
re especially noticeable at

five points of the circumference, two of them pointing upward and outward, and three having a general downward direction. These prongs could be traced through a distance even exceeding the diameter of the sun, and near one of them was visible a curved mass of light, in shape resembling the petal of a flower. On the upper edge of the disk was plainly seen an arch of light, parallel with the edge, and within the boundary of the corona.

"It should be stated, that this phenomenon of the corona is best observed with the naked eye, and cannot be included within the field of an ordinary telescope.

"The commonly received explanation of the corona, has attributed it to an atmosphere surrounding the sun, which was illuminated by the light of the sun in the same way that our atmosphere is illuminated in twilight. This will undoubtedly explain the luminosity found nearest the disk; but it can hardly be received as satisfactory in regard to the luminous prongs which extend out to such a great distance. It must be remembered that these prongs projected a distance greater than the whole diameter of the sun, and must have reached an attitude, if they belonged to the sun, of at least a million of miles. This is, of course, beyond all possibility, and the idea of the whole phenomenon being of solar-atmospheric origin is untenable. Equally untenable must be the idea that it is a solar aurora, because an aurora supposes an atmospheric medium in which it exhibits itself.

"The impression which was firmly made upon my mind by witnessing it, was that in some way the interstriated part, at least, was formed in the earth's atmosphere."

2. *Red Protuberances.*

"The second phenomenon attracting attention was that of the sudden appearance of a number of protuberances, of various shape and magnitude, which projected beyond the black disk of the moon, and were of a bright rosy red color. We saw six or eight in all. It must be remembered that these were of immense size; the largest was not less than thirty thousand miles in altitude. They seemed to have a cloudy consistency, and the form of some of them forbade the idea that they could have been either solid or liquid. These protuberances are seen in all total eclipses, but in no two are they in the same place or of the same form. They are thus shown to be of a changeable and transitory character. This was really all that could certainly be known about them, until the application of the spectroscope to celestial bodies gave us a new road to a knowledge of them. By means of this, we are able to distinguish a solid body from a gaseous; a self-luminous from a reflective body; and even more; to determine, with certainty, the very elements comprising the incandescent body. This mode of investigation, used first in the total eclipse of 1868, and still more in that of the recent eclipse, has revealed to us that the red protuberances are mainly a mass of incandescent hydrogen gas. The thought is overpowering. Here are vast accumulations of blazing matter, reaching to a height of many thousand miles. What convulsions in the matter of the surface of our sun does this view of it reveal!

"That the spots which are seen on the surface of the sun will finally be proved to be identical with the protuberances, I venture to predict."

The most remarkable of the red flames, is that represented at the top of the drawing. It was seen nearly a minute previous to totality, and remained visible almost six minutes after totality had ended. We had it under observation during nearly the whole duration of the total eclipse. Its height was measured with the parallel wire micrometer, and found to be 1′ 05″, equivalent to thirty thousand miles. It may be necessary to state, that the micrometer screw head was not read until after the end of totality. The fixed wire then stood between two movable ones, dividing the interval in spaces of 1′ 05″, and 2′ 45″. We assumed the smaller interval as the height of the protuberance; but on discussing the subject with the other observers, it was considered altogether too small. We thought it possible there might have been a mistake in the interval used, and accordingly adopted the largest measure. But observations made at other points seem to show, conclusively, that the smaller measure is the correct one. Its position was 20° to the apparent north of the equator, and its base was estimated at three times its height. Directly under it was seen a white spot, nearly as large as the protuberance itself. This was probably its reflection on the disk of the moon. Its physical constitution is well described by Mr. Swift, in his report. While under our observation, no radical changes in its appearance were noticed. The color was a deep red near the base, gradually changing to pink toward the top.

The spectroscope shows that these flames are hydrogen gas in a state of combustion. Its illuminating power, however, must be very great; since this flame was seen, for nearly six minutes after the end of totality. Its disappearance was peculiar and entirely contrary to our expectations. It was presumed that a luminous flame, when brought in opposition to a stronger light, would gradually grow less and less, until it finally faded away. No such phenomenon was manifested during its disappearance. It seemed to retain its intensity until it was entirely cut off, or apparently lifted up, by the advancing crescent of solar light. This phenomenon was also remarked by Mr. Swift.

Another flame, to the left, had two branches bent outward, looking somewhat like the antlers of a deer. Its height was not measured, but was estimated to be nearly as great as the large one before described. To the right, a small one projected out, which was bent in the form of a hook. The remaining four noticed, were small, and did not present any unusual appearance.

STARS VISIBLE.

Previous to the beginning of the eclipse, we set up a number of light wooden rods, indicating the direction of stars and planets. Prof. Twining and Mr. Marshall succeeded in seeing Saturn eight minutes before, and Venus four minutes before totality. During the totality, Mercury, Venus, Mars, Saturn, and a number of bright stars, were visible to the naked eye.

TEMPERATURE.

Observations made by Prof. Smith, with a thermometer exposed to the direct rays of the sun, showed a variation of 42°, during the progress of the eclipse.

The observations of Mr. House, with a thermometer placed in the shade, showed a variation of 13°.

FLOATING BODIES.

During the progress of the eclipse, all the telescopic observers noticed faint whitish bodies darting past the field of the telescope. At the time they made no impression, but were presumed to be thistle down, midges or swallows. But when the observations were compared, it was found that they were all seen falling in one direction, viz., downward. The idea that they were meteoric is more plausible, and it is strengthened by the fact, that the time nearly corresponded to the August period of meteoric showers.

EXTERNAL PHENOMENA.

To the naked eye, a total solar eclipse exhibits one of the grandest spectacles in nature. On the sudden extinction of the light, the whole aspect of the landscape seems changed, the faces of our companions assume an ashy paleness, and all nature is surrounded with an unearthly light, producing, insensibly, a feeling of terror in the mind of the beholder.

The intensity of the darkness is not as great, however, as many have imagined. The light is about equal to that during a clear moonlight night, at the full. I found it impossible to read a coarsely divided circle, without the aid of a lamp; but I should judge that coarse book print could be read, if exposed directly to the light of the corona.

The effect on plants and animals has long since been observed. A few of the numerous incidents collected by our party are appended:

A dog, at the beginning of totality, looked around in all directions, then tucked down his tail and ran rapidly under a building, from which he could not be induced to come out until after the sun's rays again appeared.

A team of horses, tied to a post, became so uneasy and frightened, that it was found necessary to quickly unhitch them from the wagon.

A small child was noticed to look around in amazement, and then exclaim, "Oh, mother, it's going to thunder loud!"

During totality, frogs, which had not been heard during the day, began to croak, chickens went to roost, and hens hurriedly called together their broods. People instinctively shouted, when the first beam of light appeared.

An unruly cow, accustomed to jump into a cornfield at night, was found there after the eclipse.

During the most exciting period of the eclipse, General Keifer saw a man going at full speed across the street, who said he was going to see what his chickens were doing. He soon returned in a state of intense disgust, declaring, in a very emphatic manner, that they were scratching away as if nothing had happened.

For a description of the naked eye phenomena, visible to the scientific observer, the reader is referred to the able and interesting report of President Hill.

The following quantities, measured from the chronograph sheets, will show the progress of the phenomena:

	Mattoon mean time.			Obs.
	h.	*m.*	*s.*	
Lunar mountain in contact with the sun	4	11	07.5	H.
Beginning of the eclipse	4	11	16.8	H.
Beginning of the eclipse	4	11	15.2	S.
Red flame seen	5	10	50.0	H.
Bailey's beads	5	11	23.6	H.
Bailey's beads	5	11	22.4	S.
Beginning of totality*	5	11	28.5	H.
Beginning of totality*	5	11	28.0	S.
End of totality	5	14	11.3	H.
Duration of totality		2	42.8	H.
Duration of totality (naked eye)		2	40.0	
Disappearance of red flame	5	20	06.5	H.
Red flame seen after totality		5	55.2	H.
End of eclipse	6	09	09.4	H.
Duration of Bailey's beads			04.9	H.
Duration of Bailey's beads			05.5	S.

The initials, H. and S., refer to the observation of Hough and Swift.

These observations depend on Dudley Observatory time, using the longitude of Mattoon as determined by the United States coast survey, viz.: 58m 33·0s west of Dudley Observatory. The probable error of the Dudley Observatory clock will not exceed ±0·20s.

The Armature time for the "repeaters" and "relays" was found to be 0·21s. This quantity has been used in the comparison of the chronographs at Dudley Observatory and Mattoon.

Great precision, in the observation of the beginning or end of a solar eclipse, is not at present attainable by any method.

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* Record on the chronograph sheet very faint.

Until we have a complete chart or delineation of the moon's edge, it will be impossible to observe the contact of the sun's and moon's limb, within one second of time.

REPORT BY LEWIS SWIFT, ESQ.

MARATHON, N. Y., *August* 12, 1869.

Prof. G. W. HOUGH :

DEAR SIR.—I herewith send you, as chief of our party, a report of my observations on the eclipse of August 7th, as observed by me at Mattoon, Ill.

I shall describe the phenomena just as they appeared to me, and nearly in the order in which they occurred.

The telescope used has a 4·5 in. objective, and a focal length of 6 feet, mounted temporarily for the occasion as an altitude and azimuth instrument. The eye-piece used gave a power of 36.

About two hours before the eclipse, I marked on a circular disk the positions of four of the principal solar spots, numbered *a*, *b*, *c* and *d*, in the order in which they were severally occulted by the advancing edge of the moon.

The device used to do this, and also to measure the position of the protuberances, was constructed for the occasion as follows :

Two circular sheets of metal, of 6 and 8 inches in diameter, concentrically placed upon each other, with a disk of card board between them, was graduated to 5° of arc. The center was pierced with a hole equal to the size of the screw on the spring tube which holds the eye-piece, and which, when screwed into its place, holds it firmly. In the focus of the eye-piece was a wire, and on the eye-piece was soldered a brass spring, reaching to the graduated circle, and carrying a pencil parallel with the wire, which, when revolved with the pencil inserted, would trace a continuous mark; the design being to lift it while passing a protuberance, the space left not only showing the position, but also its width.

The wire, the pencil, and the zero of the graduated disk, were set parallel to the equator a few minutes before contact, by causing a small solar spot to traverse the wire across the field. Wind prevented setting it as accurately as I desired. The accuracy of measurements made in this way, depends on the nearness to which the sun and the field are brought to concentricity.

The position of four of the principal spots were roughly as follows: *a*, 33°, *b*, 102°, *c*, 105°, *d*, 183°. Estimated distances from sun's center in solar radii were about: *a*, two-thirds, *b* and *c*, one-half, *d*, seven-eighths.

In this manner I recorded the position of first contact, which was about 341°. Some fifteen minutes before the computed time of contact, I tried to see the limb of the moon; but with no power or aperture could I get the least glimpse of it, though I continued the effort until within one minute of contact.

A bright spot was seen on the sun near the point of contact, and the mottled appearance showed remarkably well and steady, although some dancing undulations were visible around the limb of the sun, yet, on the whole, atmospheric disturbances were nearly at a minimum; one reason for it, I think, being that I took the precaution to set my instrument where it was entirely surrounded by grass.

The time of first contact was recorded by chronograph, and though well observed, I call it recorded about one and a half seconds too late, as I was deceived by an unlooked for phenomenon.

For about two seconds after the contact, that portion of the sun covered by the moon was bounded by a straight line, instead of a curve, as I expected it would and ought to be.

A little to the right of the point of contact were five lunar mountains. I distinctly saw them enter on the solar disk, looking like the straight edge of a saw, whose teeth were worn to bluntness. The times of first and second contact with each of the several nuclei of the solar spots were recorded by chronograph.

The instant I saw those lunar mountains, the thought occurred to me, that if, as is generally supposed, Bailey's beads are caused by the sun being seen between them, then they ought to be seen more conspicuously in that vicinity; and I found by observation that my conjecture was fully realized. I recorded by chronograph the time of their first appearance and end. In appearance they bore but little resemblance to the illustrations in the books.

At 5h. 3m. a naked-eye observer came and announced the appearance of Saturn, and at 5h. 7m. the appearance of Venus.

A short time before the appearance of Bailey's beads, I saw that never-to-be-forgotten protuberance, sitting in queenly beauty on the crest of the sun. The color was much brighter, the size much larger, and altogether much more conspicuous, than any I expected to see. In fact, I was so captivated with its wonderful, unexpected beauties, as to amount to a perfect fascination. So tenaciously was my eye riveted to it, that my observations on Bailey's beads were not as good as I would have been pleased to have had them. At the instant of totality, seven or eight protuberances of indescribable beauty and splendor were seen, all but one or two being between 10° and 180°. At the first attempt to record them, a mishap occurred which for a time seriously disturbed my equanimity. My recording pencil was partly incased in a brass tube, which, when inserted, the spring was held by friction; but a two hours' exposure to the hot sun so expanded the brass and contracted the wood that, at the first attempt to insert it, the wood was forced from the tube and lost in the grass. I had another on a shelf near by, which I must have found, although I have no recollection of it, by which I recorded their position, only in a different manner.

The internal structure of the great protuberance was remarkable. It appeared to me to be interlaced with long narrow black stripes, crossing each other like irregular lattice work. To my eye, from first to last, this feature of it was one of its distinctive characteristics.

To compare it with something familiar, I would say it looked like a ship, with her hull, masts, spars, etc., painted red, and the ropes painted black. It also looked like a red, *inverted* capital W, interlaced with fine black lines. I watched its disappearance with strict attention, and am able to give you data for computing it. As the light increased, it did not gradually fade away in all its parts, as I expected it would, but instead, it began to disappear on *the left side as soon as the slender lune of the sun arrived directly under it.* When it arrived at the center of its base, the left half, and no more, had disappeared; not a gradual fading away, but sudden extinction, as though some moving object had interposed itself between me and it, and had a progressive motion equal to the advancing lune. It was a most beautiful sight, to see it thus disappear a little at a time.

Another protuberance, shaped like a *hook*, was visible on the right side, about 90° from the other. I find it recorded at 118°. It was of unequal width throughout, and had it continued on in its normal direction, would have been nearly as high as the great one. At about a quarter of its distance from the end, it was bent upward at an obtuse angle. You will find it represented in the drawing. It looks to me absurd to suppose a cloud would ever assume such a singular shape, and yet the same thing has been seen before.

The most wonderful thing about the eclipse I will now describe. I will not undertake to say it was real, but to me it seemed as much so as the corona or the protuberances. The accompanying sketch will convey a better idea of its appearance than a long description.

At first I thought the upper edge of the moon had dropped down about a minute of arc below the upper edge of the sun, but instantly seeing that that was impossible, I thought it might be caused by some false reflection on the inside of the telescope. But shaking the telescope, and finding its relative position unchanged, I concluded it was a *bona fide* phenomenon, and observed it as such. It was visible during the entire period of totality.

The limb of the pseudo moon was faintly illuminated, and between *a* and *b*, somewhat strongly, and a soft mellow light was faintly reflected downward, as represented. The protuberance *a* was plainly seen with the naked eye, looking, as several expressed it, like a ship on fire.

Directly under it was a strong light visible on the moon, extending downward as far as the protuberance did upward, and was seen by the naked eye as plainly as the protuberance itself. After the total phase of the eclipse was over, the first question asked by the hundreds of visitors was: "What is the cause of the notch in the moon?" they thinking the light was a part of the sun seen through an open space in the moon.

The protuberance *d*, I have no recollection of seeing, but I find it recorded, or rather an attempt to record one.

Owing to the time lost by the mishap, I did not observe the corona very minutely, though I noticed it was very unequal in outline and deeply striated.

Once only did I take my eye from the telescope, and then merely to observe the general appearance of the phenomena; but finding, from long continued exposure to the sun, my eye unfitted to do so, and knowing that the time for the re-appearance of Bailey's beads was nearly up, I again took my seat at the instrument. But while in the act of doing so, like a flash of lightning the shadow passed, and not only Bailey's beads but the end of totality was not seen; but seizing the wires, I made the record about two seconds late.

The crowd, which up to this time had behaved remarkably well, thinking the eclipse ended, rushed around the instruments and broke the wires, and I was obliged to complete the records by observing the time by watch, which, by comparison with sidereal clock, was 53 seconds fast.

My records are for:

Re-appearance of center of spot *a*	5h. 26m. 30s.
Re-appearance of center of spot *d*	6h. 3m. 35s.
Last contact	6h. 8m. 20s.

Respectfully yours,
LEWIS SWIFT.

REPORT BY PRESIDENT HILL.

Mattoon, Illinois, *August* 7, 1869.

Prof. G. W. Hough:

Sir.—During the total eclipse this afternoon I was in an open field near a small barn, about sixteen hundred feet west and five hundred and fifty feet south of your station. According to your request, I herewith give you a memorandum of what I noticed. This memorandum has been twice read to a party of five gentlemen who were with me, and they agree, after full discussion, in every statement.

A cow, grazing in the field, became uneasy at 5 o'clock, and started for home at 5h. 7m. Soon after, a hen gathered her brood under her wings. Swallows were skimming the ground. About two minutes before the total obscuration, about seventy cocks and hens went to roost in the barn.

A flock of birds flew south, in a hurried and confused manner, just after the darkness became total. Soon after the re-appearance of the sun, the chickens came from under the hen; then the fowls came down from their roosts, and the cocks, which had crowed occasionally all the afternoon, took it up by general consent and crowed vigorously.

No other animals were near us. No plants sensitive to light were in the field, and it was not until after the eclipse was over that I discovered cassia in an adjoining field. Some of us thought there was a slight deposit of dew upon the grass, but others failed to perceive it.

Venus appeared a minute or two before the total obscuration, and remained visible for several minutes after the re-appearance of the sun. At the instant of total obscuration, Mercury, Arcturus and Vega appeared. Even Arcturus was of a silvery whiteness. Arcturus remained visible some seconds after the total phase had passed.

We looked sharply for Capella, Procyon, Castor and Pollux, Regulus and Altair, and also looked less carefully for Saturn, Antares, Spica and Mars; but we had nothing but our general recollection of the stars to guide us as to the direction in which to look, and we saw nothing, either with the naked eye or our opera glasses, beyond the two planets and two stars first mentioned. At the instant of total obscuration, one or two of us had a feeling that we were seeing half a dozen stars bursting into sight at once, but we could only find the two.

The approach of the deep violet shadow in the air from the W. N. W., a little to the right of the sun, and its receding in the opposite quarter, was much slower and more majestic and beautiful than we had been led to expect.

The gradual diminution of light during the eclipse, had revealed the presence of faint cirro-stratus clouds in the horizon of what appeared, both before and after, a cloudless sky. The transition from penumbra to umbra, although rapid, did not seem absolutely instantaneous; it was a sweeping upward and eastward of the dense violet shadow. This shadow then stretched from the west-north-west to the east-south-eastern horizon, while in the transverse direction it did not reach the horizon by 6° or 8°, and the low arch beneath was full of a deep orange yellow twilight. No difference was observed between the height of these arches. The transition from the orange yellow of the northern and southern horizon to the deep dusky violet of the zenith, during the total phase, was accomplished at an altitude of 12° or 15°, and there the violet seemed darker than in the zenith, as though two broad dark arches ran, one on each side the zenith, from W. N. W. to E. S. E.

The coronæ appeared to us a white ring of 4′ or 5′ in breadth, with white rays 30′ to 35′ in length, and a few white petals 6′ or 8′ in length, one of which, on the right upper limb, was curved. No change was observed in the coronæ during the total phase, except that one of us thought there was a tremulous flashing at the instant before the reappearance of the sun.

A crimson cloud on the lower limb was particularly brilliant; one on the left limb was brilliant at the beginning, and one on the right limb at the end of the total phase.

Respectfully yours,

THOS. HILL.

REPORT BY J. C. HOUSE, ESQ.

WATERFORD, *August* 16, 1869.

To Prof. G. W. HOUGH:

Having been so kindly received by yourself and given a place among your party of observers, during the recent eclipse at Mattoon, I take pleasure in transmitting to you the results of my observations.

My station was near that of your own (about five feet N. W., as marked on the diagram). The observations were made with an achromatic telescope, 3.25 inch aperture, with a terrestrial or direct eye-piece having a power of about 35. A convenient arrangement for reducing the aperture was attached to the telescope tube. In the shade of the brass standard supporting the telescope was suspended a Fahrenheit thermometer having an ivory scale, with which the observations for temperature, during the progress of the eclipse, were noted.

A portion of the observations were timed by a watch, prerances, if any should appear before totality, I missed the contact with the large eastern spot, but noticed soon after the formation of Bailey's beads, and as I heard the signal key record the time, I did not note it by the watch. The beads appeared to me to cover about 60° of arc, and their duration to be from 5^s to 8^s. They were somewhat irregular in their formation and of different lengths, but presenting a very beautiful appearance. Appearing as they did at a point coincident with the mountainous or rough edge of the moon, observed at first contact, it seems to me not difficult to account for their formation.

My observations of the total phase was also coincident with the record of your signal key, and as soon as noted, I commenced sweeping the disk for the red protuberances. I was first struck with the size and appearance of the one on the lower quarter; then the double hooked one on the western edge, and then the two upon the eastern side, as marked in the accompanying diagram. The color was of dark deep red, having a somewhat lighter shade near the outer edge.

I was also conscious, for a few seconds, of the appearance of a continuous series of small ones, or rather, perhaps a red line with an occasional break, on the S. W. quarter.

My observations of the corona were imperfect, in consequence of not taking it all in the field of my glass. It showed white rays of varying lengths in different positions, giving the appearance of fine points. With regard to its general features, my impressions accord well with the diagram prepared by Prof. Murray. I, however, received an impression of its assuming a roseate tint near the end of totality. I regret that I had not been more particular in my observations, as the apparent change of tint does not appear to have been noticed. Probably it was an effect produced by the colored shade I had previously used.

The burst of sunlight at reappearance seemed instantaneous, and so brilliant and overpowering that I omitted t note the time. The change of temperature during th progress of the eclipse was very marked, every one notin the chilliness increase as the shadow advanced. The thermometer showed the following record in the shade :

3h. 30m. P. M., before eclipse	80
4h. 10m. P. M., at beginning of eclipse	77
5h. 0m. P. M., eclipse partial	70
5h. 12m. P. M., eclipse total	64
5h. 30m. P. M., eclipse partial	68
6h. 10m. P. M., eclipse ended	70

showing a change of 13° during the progress of the eclipse

Both before and during the eclipse, I saw, in the telescope shooting swiftly across its field, a number of bright whit objects, perhaps twenty in all, never more than one or tw at the same time, generally moving in the same direction downward. It is possible they might have been smal meteoric bodies, but I imagined at the time that they wer insects.

OBSERVATIONS OF THERMOMETER IN THE SUN, BY PROF. T. H. SMITH.

Mattoon mean time.	Temperature.	
3h. 40m.	100°	
3h. 45m., cool wind	97°	
3h. 50m.	99°	
3h. 55m.	102°	
4h. 0m., breeze	98°	
4h. 5m., breeze	96°.5	
4h. 10m.	97°	beginning of eclipse.
4h. 15m.	96°	
4h. 20m.	94°.5	
4h. 25m.	94°	
4h. 30m.	90°	
4h. 35m.	90°	
4h. 40m.	87°	
4h. 45m.	85°	
4h. 50m.	81°	
4h. 55m.	76°	
5h. 0m.	72°	
5h. 5m.	67°	
5h. 10m.	62°	
5h. 15m.	60°	totality.
5h. 20m.	61°	
5h. 25m.	63°	
5h. 30m.	69°	
5h. 35m.	69°	
5h. 40m.	72°	
5h. 45m.	76°	
5h. 50m.	80°	
5h. 55m., breeze	77°	
6h. 0m.	74°	
6h. 5m.	75°	
6h. 10m.	73°	end of eclipse.

VELOCITY OF THE ELECTRIC CURRENT.

The velocity of the electric current, over land lines of telegraph, has been the subject of numerous experiments during the past twenty years. The great discrepancies existing between the different determinations, led us to suspect, that the so-called velocities were mixed up with some other phenomena, since they were found to vary between 13,000 and 30,000 miles per second.

My attention was especially called to the subject, by Mr. [redacted]

DATE.	Length of circuit.	Velocity per second.	Observer.	Remarks.
1833–4	½ mile	288,000	Wheatstone	Leyden jar.
January, 1849	880	18,700	Walker	Relay.
October 31, 1849	590	16,000	Walker	Relay.
November, 1849	607	28,500	Mitchel	Relay.
1850	260 iron	60,000	Fitzeau and Gounelle	Galv. needle.
1850	130 copper	114,000	Fitzeau and Gounelle	Galv. needle.
1850	1,045	15,000	Gould	Relay.
1850	447	17,000	Walker	Relay.
1850	230	13,000	Walker	Chemical telegraph.
1854	104 iron	115,000	Guillemain and Burnouf,	Diff. galv.

An examination of this table reveals no law, except that, apparently, the shorter the circuit and the more delicate the instrument, the greater is the velocity.

Circuits were secured on the nights of April 8th, May 20th and May 27th. But owing to want of uniformity in the adjustments and manipulations of the instruments, only those results obtained on the 27th have been employed for determining the law of propagation.

RELAYS.

Three different relays were used in these experiments, the approximate resistances of which are as follows:

No. 1. 30 miles of No. 9 wire; Tillotson, maker.
No. 2. 55 miles of No. 9 wire; Day, maker.
No. 3. 35 miles of No. 9 wire; Williams, maker.

Nos. 1 and 3 were placed at the ends of the circuit. No. 2 could be switched in either end at pleasure, or cut out entirely.

SWITCH BOARD.

A special switch board was constructed, which was capable of the following manipulations:

1. Relay No. 2, could be thrown in either end of the circuit.
2. Relay No. 2, could be thrown out entirely.
3. The clock could be made to open and close the circuit, at either end of the line.
4. Each relay could record the clock beats on the chronograph.
5. Each relay could work a local sounder.

For accomplishing these changes, ten movable switches were necessary.

CHRONOGRAPH.

The chronograph used in these experiments, is a revolving disk, provided with two recording pens, worked on an open circuit. It is capable of recording time to the one-thousandth part of a second, and has been fully described in volume I, *Annals of the Dudley Observatory.*

The local circuit, passing through the sidereal clock, included chronograph pen No. 1, together with a small pony sounder, arranged to close the main line circuit in the same manner as an ordinary relay. When the clock was thrown in circuit, its beats were recorded on the chronograph by pen No. 1. As the sounder worked simultaneously with the chronograph pen, the main circuit would necessarily be opened and closed at the same instant, and the relays would be operated. If, then, the necessary connections were made, the relay would record the clock beats on the chronograph with pen No. 2. Now, in case the length of the main line

In order to eliminate as much as possible the source of error arising from variations of armature time, (2), (3) and (4) are reduced to a minimum. More especially is this necessary for (4), the motion of the armature. In our final experiments, the play of relay armature was reduced to one or two one-thousandths of an inch.

When (5) is zero (which is the case with a local circuit or short line), and (2), (3) and (4) are reduced to a minimum, the strength of the battery does not essentially change the armature time.

In working over a long line of telegraph wire, the escape is always considerable; consequently, in order to work from both ends of the circuit without change of adjustment, (3) cannot be reduced to a minimum, but will depend on the amount of escape and the strength of the battery.

In our experiments, the armature time of relay, plus recording pen No. 2, was determined for each separate adjustment.

CIRCUITS.

The circuits were made up Mr. C. S. Jones, manager of the Albany office, by looping together wires leading to Buffalo, New York, Boston, etc., until a sufficient length of circuit was secured. The connections at those points were made by the managers or operators in charge. I cannot but express my thanks to them, for the courtesies and facilities afforded us in these experiments.

When all the arrangements were completed for the experiments, the operator at the Observatory requested a certain length of circuit, with a given number of battery elements. As soon as the necessary connections were made, Mr. Jones stated the length of circuit, together with the number and position of the battery elements. The clock was then thrown in circuit, and the line was opened and closed at one end; and each one of the three relays were used to record the beats on the chronograph. The same thing was also done by opening and closing at the other end.

Each complete experiment gave the following results:

1st. Armature time of relays.

2d. Armature time, plus time of transmission.

3d. Armature time, plus time of transmission in the opposite direction.

For the second experiment, additional length of circuit was secured, and the same class of results deduced.

In this manner, the longest circuit was used which the batteries and instruments were capable of operating.

The circuits were continuous, without any repeaters or relays, except those used at the Albany office and the Observatory.

As the repeater time varies from 0.^{s}03 to more than 0.^{s}10, any results for velocity through them would be greatly impaired, if not entirely vitiated.

The longest circuit employed was 2,400 miles. Intelligible signals and clock beats could be sent over it, but owing to trouble on the wire, we were unable to use the results for velocity determinations.

Each separate result was the mean of at least twenty-five measures, from the chronograph sheets.

The following table exhibits the final results:

	Observed velocity, miles per second.	No. of battery elements.	Length of circuit in miles.	Remarks.
April 8th.	12,200	120	1,000	Not comparable, owing to the change of adjustment between the experiments.
"	14,400	165	1,000	
May 20th.	6,700	205	1,300	Not comparable. Trouble on the line. Tension of spring adjusted very taut.
"	9,300	250	1,300	
"	12,400	295	1,300	
May 27th.	10,200	70	400	Adjustment of relays not changed.
"	20,000	160	400	
"	29,450	295	400	
"	18,200	295	1,000	

An inspection of these results shows, at a glance, that the velocity increases with the number of battery elements employed; also for the same battery, it decreases with the length of the circuit. The question then naturally arises, Can the apparent velocity be expressed by a rigid mathematical formulæ?

The great difference between the velocities obtained on different nights, as also on the same night, leads us to inquire whether this is a real velocity of the electric impulse, or only a mechanical phenomenon manifested in the electro-magnet.

If the celerity of the motion of the armature is proportional to the *magnitude* of the force acting on it, then our apparent velocities ought to be directly proportional to the *magnetic force* of the current. If this is found to be the case, our results can only be regarded as mechanical effects, entirely distinct from the real velocity of the electric wave.

Ohm's celebrated law enables us to compute the magnetic forces for circuits of all kinds, and from these to deduce the relative ratios of the velocities.

The general formulæ is—

$$f = \frac{n\,e}{n\,R + r}.$$

f =Magnetic force of the current.
e =Electro-motive force.
n=Number of battery elements.
R=Resistance of one battery element.
r =All the other resistances in the current.

This formulæ will be somewhat modified by the escape, but as the amount was not measured, the computation will be made without taking it into account.

If we make the resistance of the relays equal to 200 miles of line wire (which cannot be more than $\frac{1}{10}$ in error), and will not materially affect the computation, we will have the following equations for the expression of the magnetic force, for the four experiments of May 27th:

$$f_1=\frac{70\,e}{70\ \mathrm{R}+400+200}=\frac{70\,e}{70\ \mathrm{R}+600}$$

$$f_2=\frac{160\,e}{160\ \mathrm{R}+400+200}=\frac{160\,e}{160\ \mathrm{R}+600}$$

$$f_3=\frac{295\,e}{295\ \mathrm{R}+400+200}=\frac{295\,e}{295\ \mathrm{R}+600}$$

$$f_4=\frac{295\,e}{295\,\mathrm{R}+1000+200}=\frac{295\,e}{295\,\mathrm{R}+1200}.$$

The ratio of the velocities observed, making the first unity, is as follows:

$$V_1=1$$
$$V_2=1.97$$
$$V_3=2.89$$
$$V_4=1.79$$

Substituting these values of V_1, V_2, etc., for f_1, f_2, etc., in the four equations, and determining e and R, we find—

$$e=10.05$$
$$\mathrm{R}=+1.43$$

Now, with the computed values of e and R, we may find the apparent velocities. The following is the result:

There was no difference in the apparent velocity, whether the current passed from the positive to the negative pole, or *vice versa.* Neither was there any measurable difference, whether the battery was all on one end or divided. It was, however, found to be impracticable to work a long circuit, say 1,000 miles, with the whole battery at one end of the line.

The computed value, $R=1.43$ miles of line wire, is apparently many times too great, but when we consider that no less than from fifteen to twenty wires are fed from the same battery at the same time, it is not an impossible value. It would perhaps be preferable in such cases to modify the general formulæ, by dividing the electro-motive force by the number of lines fed from the battery, which would give R more nearly its true value. But there are so many modifying causes at work in such experiments, that refinement in mathematical computation is not possible or desirable.

In case we had a galvanometer and rheostat, the values of e and R could be measured directly, and the magnetic force of the current at once ascertained. This is by far preferable, and we hope, at some future time, to continue the experiments with such apparatus.

ON THE RATE OF THE SIDEREAL CLOCK FOR TWO YEARS.

One of the most important instruments in an observatory is a good astronomical clock; one which can be relied upon to keep a uniform rate for a considerable period of time. Although fine movements have been constructed by celebrated makers, it is a rare thing to find a clock with a perfectly compensated pendulum. As a general thing, nearly all clocks, as they come from the makers, are in fault as regards the temperature compensation.

We apprehend that the chief cause of failure lies in the be enclosed in a double case, in a room where the variations of temperature are small and never sudden. Any well constructed clock, under such conditions, will give fair and satisfactory results, and a first class clock excellent results. The object of this paper is to call the attention of clock makers and others to the peculiar effect of temperature on the compensation, due, as we imagine, to the influence of the oil on the escapement.

In the compensation of any pendulum for temperature, two things are to be considered: first, the change in the length of the rod; and second, the change in the length of the arc of oscillation. If a free pendulum is compensated to maintain a uniform distance between the center of oscillation and the point of suspension, it will not follow that the same pendulum, when applied to a clock movement, will give a uniform rate for different degrees of temperature. As soon as it is connected with the escapement, the arc of oscillation becomes longer or shorter, as the temperature rises or falls; and this may change to such an extent as to vitiate all the benefits derived from a perfectly compensated free pendulum. In order, therefore, to secure a compensated pendulum, it must be driven by its own escapement, properly oiled; then, when it is heated, the expansion of the rod, as well as the change of oscillation, will equally enter as determinate elements. Although in this way we do not get a pendulum which, if swung freely, would maintain a uniform distance between the center of oscillation and the hanging point, yet we secure a constant rate for the extreme degrees of temperature for which the compensation was made.

If a pendulum is compensated to go on the same rate at 60° and 120° Fahr., it does not necessarily follow that it will maintain the same rate at intermediate points nor for outside limits. The very nature of the oil used makes it imperative to compensate for the degree of temperature in which the clock is presumed to run.

Pendulums compensated from 60° upward are supposed to be correct for lower temperatures. This is obviously fallacious; since below this point the effect of the oil is most apparent in changing the arc of oscillation. As long as the oil is fluid, the arc of oscillation is not materially affected, but when it begins to thicken the effect is quite considerable.

The thickness and elasticity of the hanging spring will also modify the compensation, through change in the length of the arc of oscillation. Hence, in case the original spring is broken, it should be replaced by another, similar in all respects.

In case the compensation for temperature is perfect, the rate still needs a correction for the change in the density of atmosphere. Attempts have been made to correct for this variation, by attaching a small barometer on the side of the pendulum rod; but the difficulty of securing the exact compensation, as well as the increased source of error arising of suspension, dipping at every double oscillation in a cup of mercury. The effect of this connection is almost inappreciable on the daily rate, as the only mechanical work to be done is touching the surface of the mercury with a fine platinum wire.

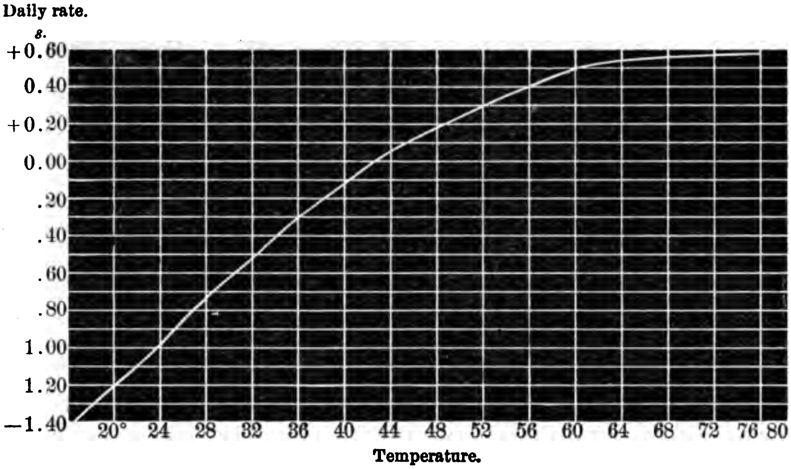
During the period of nearly two years, the case was opened two or three times, but otherwise the clock was not disturbed.

The temperature in the room was read at 8 A. M. and 7 P. M. of each day, from a thermometer suspended on the wall, at a height on a level with the top of the pendulum. These readings are not presumed to give the true mean temperature of the pendulum, but will serve to show approximately the connection between the temperature and rate.

The corresponding barometric heights were taken from hourly indications of the printing barometer, and give the true mean pressure.

The following is the table of data and results:

CURVE SHOWING THE DAILY RATE OF THE SIDEREAL CLOCK CORRESPONDING TO DIFFERENT DEGREES OF TEMPERATURE.

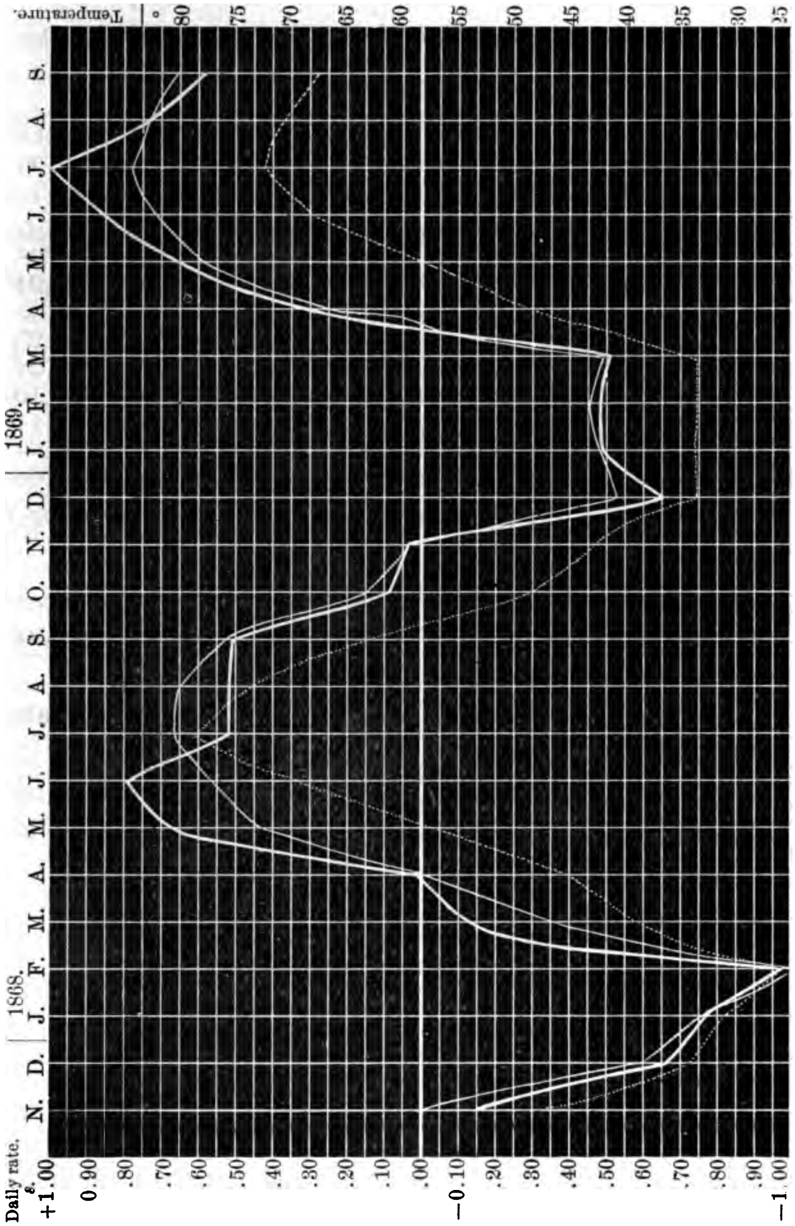


DAILY RATE OF THE SIDEREAL CLOCK FOR TWO YEARS.

DATE.	Observed daily rate.	Mean temperature.	Mean barometer.	Computed rate.	△ (O – C).
1867.	s.	°	in.	s.	s.
November....	—0.13	47.5	29.84	+0.01	—0.14
December	—0.67	33.7	.85	—0.61	—0.06
1868.					
January......	—0.76	31.5	.84	—0.73	—0.03
February.....	—0.97	27.3	.96	—1.05	+0.08
March	—0.12	38.4	.86	—0.36	+0.24
April	+0.02	44.8	.82	—0.03	+0.05
May	+0.69	57.6	.71	+0.44	+0.25
June.........	+0.78	69.0	.86	+0.57	+0.21
July	+0.51	78.9	.78	+0.66	—0.15
August.......	+0.51	73.1	.82	+0.65	—0.14
September....	+0.49	64.4	.88	+0.53	—0.04
October	+0 08	50.2	.97	+0.14	—0.06
November....	—0.04	44.7	.80	+0.04	—0.08
December	—0.67	33.0	.83	—0.52	—0.15
1869.					
January......	—0.47	33.6	.77	—0.48	+0.01
February.....	—0.47	33.0	.72	—0.45	—0.02
March	—0.52	33.1	.83	—0.49	—0.03

CLOCK RATE AND TEMPERATURE, FROM NOVEMBER, 1867, TO OCTOBER, 1869.

Fig. 2.



Heavy line=observed rate. Light line=computed rate. Dotted line—temperature.

An approximate solution of the equations given by twenty-three months of daily rates, shows:

1st. A gradual increase in the mean rate, independent of temperature or pressure, but depending on the time. This amounts, in the two years, to $0^s.25$ daily. The cause of it is undoubtedly due to the drying up of the oil, thereby reducing the arc of oscillation.

2d. The effect of the variation of pressure is indicated; but as the mean barometer varies from month to month by so small an amount, the conditions are not favorable for a correct determination of this quantity.

3d. The variation due to temperature is considerable. If the oscillation did not change, the correction for the rate would vary directly as the temperature. But this is not the case; for, at 20° Fahr., one degree increases the rate $0^s.06$ daily; at 70°, $0^s.01$; at 76°, $0^s.00$, and at 80° the correction is negative.

The curve and table will show the correction to the rate for every degree, from 20° to 80° Fahr. The following constants

DAILY RATE CORRESPONDING TO DIFFERENT DEGREES OF TEMPERATURE.

Temperature.	Rate.	Temperature.	Rate.	Temperature.	Rate.
°	s.	°	s.	°	s.
20	—1.48	40	—0.30	60	+0.38
21	—1.41	41	—0.26	61	+0.40
22	—1.34	42	—0.21	62	+0.42
23	—1.27	43	—0.16	63	+0.44
24	—1.20	44	—0.12	64	+0.46
25	—1.14	45	—0.08	65	+0.47
26	—1.08	46	—0.03	66	+0.48
27	—1.02	47	—0.00	67	+0.50
28	—0.96	48	+0.03	68	+0.51
29	—0.90	49	+0.07	69	+0.52
30	—0.83	50	+0.10	70	+0.53
31	—0.77	51	+0.14	71	+0.54
32	—0.71	52	+0.17	72	+0.55
33	—0.65	53	+0.20	73	+0.55
34	—0.60	54	+0.23	74	+0.56
35	—0.55	55	+0.26	75	+0.56
36	—0.51	56	+0.29	76	+0.56
37	—0.46	57	+0.31	77	+0.56
38	—0.42	58	+0.34	78	+0.56
39	—0.36	59	+0.36	79	+0.56

The computed and observed rates for the whole period, together with the temperature, is shown in the diagram, Fig. 2.

The agreement between observation and computation is perhaps as close as might be expected from the defective data in regard to the temperature; since a variation of one degree would account for the general discrepancies. The examination of the column headed (Obs.—Comp.) would, however, seem to indicate that, at two or three periods, the normal rate was subject to sudden changes of about $0^s.20$ daily.

METEORIC SHOWER OF NOVEMBER 14, 1867.

On the night of the 12th November, a general watch was kept up, but as it continued cloudy during the whole time, no meteors could be seen.

On the night of the 13th, however, it was perfectly clear until 11½ P. M., after which, until 3h. 45m. A. M., the sky was more or less obscured by broken clouds. During the evening, for the greater portion of the time, two persons were on the watch continually. The observations were made by Messrs. Simons, Brandt, McClure and myself.

A little after 1h. A. M., ten meteors of considerable brilliancy were noted, emanating from the direction of Leo, and passing through the constellations Gemini and Canis Major. Clouds now obscured the greater portion of the eastern heavens.

At 1h. 25m. A. M., two of great brilliancy, more than double quency, we decided to abandon the location of paths, for unless they were recorded chronographically at other stations they could not be identified. We thought, however, to continue the record of the time of appearance and time of flight; but in a few minutes the number increased so rapidly that we found it impracticable, as it was impossible to record all. We desired, moreover, to see this magnificent display to the best advantage.

The following notes were made at the time:

4h. 16m. A. M.—They fall with increased frequency, and are of greater brilliancy. Four, brighter than second magnitude stars, shot in quick succession to the north-western horizon. They are radiating from Leo in all directions.

4h. 18m.—One, brighter than Jupiter, of a beautiful and purple color, shot toward the south-west, near the full moon. It left a train visible for fifty seconds. 4h. 33m.—Partially clouded over. 4h. 41m.—Clear sky. 4h. 48m.—One, larger than any previously seen, shot from Leo toward the eastern horizon.

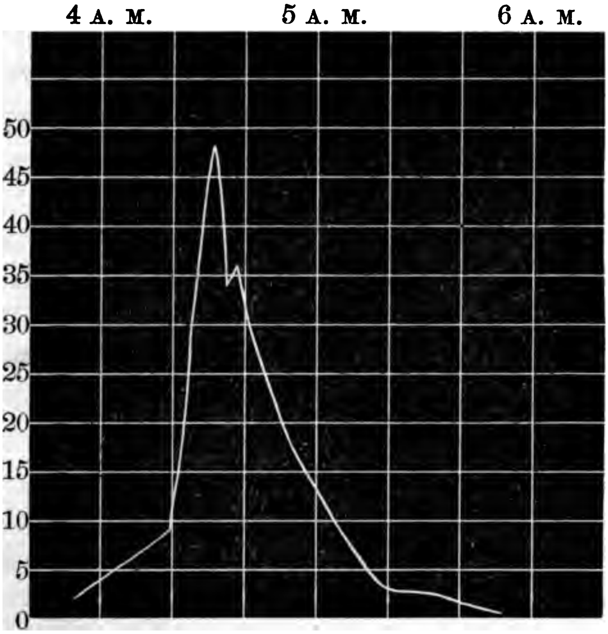
5h. 01m.—Two of dazzling brilliancy emanated simultaneously from the same point, and passed through Ursa Major, disappearing at the northern horizon. The trains remained visible nearly a minute. 5h. 07m.—A very brilliant one passed from Leo north-east, its path being very near Arcturus. It left a train visible sixty-five seconds. 5h. 08m.—Clear in the zenith and east, but cloudy in the west. Many meteors passed through Ursa Major. 5h. 20m.—Cloudy. 5h. 38m. Clear in the east. 5h. 41m.—A very brilliant one moved toward the north, leaving a broad train, which remained visible sixty-seven seconds.

The following table shows the number of meteors counted, all emanating from the direction of the constellation Leo:

Dudley Observatory mean time.	No. of meteors.
4h. 05m. A. M.	37
4h. 25m. A. M.	180
4h. 30m. A. M.	312
4h. 32m. A. M.	406
4h. 33m. A. M.	440
4h. 35m. A. M.	512
4h. 38m. A. M.	610
4h. 41m. A. M.	708
4h. 44m. A. M.	802
4h. 48m. A. M.	900
4h. 53m. A. M.	1,000
4h. 59m. A. M.	1,100
5h. 08m. A. M.	1,200
5h. 22m. A. M.	1,247
5h. 54m. A. M.	1,301

It appears from an examination of the foregoing table, that the maximum of frequency occurred at 4h. 31m. A. M.; and the rate of fall was forty-seven in one minute.

AVERAGE NUMBER OF METEORS PER MINUTE, OBSERVED AT THE DUDLEY OBSERVATORY, NOVEMBER 14, 1867, FROM 3H. 50M. A. M. TO 5H. 50M. A. M.



REPORT FOR 1866.

To the Board of Trustees of the Dudley Observatory:

The following report will show the nature of the work done during the past twelve months, and the condition of the buildings at the beginning of the current year.

The buildings have been kept in good repair, and the instruments have always been in complete working order.

During the first four months we were engaged in printing volume I, Annals of the Dudley Observatory, published by the State; in conformity with a resolution passed by the Legislature at the previous session. The volume contains 325 pages, comprising the history of the institution, description of its instruments, annual reports, and observations on asteroids, comets, etc. About three hundred copies were distributed, through the Smithsonian Institution, to foreign

The Transit has been used for observation on standard stars, and for special investigations of instrumental errors.

The Equatorial has been occasionally employed for extra-meridian observations; and has also been in constant use, on nearly every clear night, by visitors, under the care of the janitor.

The automatic method, devised last year, for recording and printing the height of the barometer has proved eminently successful. The mean error of a single printed result, from the discussion of a large number of records, has been found to be $\pm 0^{in}.0035$; equal, therefore, in this respect, to readings made with the standard barometer.

The comparison of simultaneous records, made by similar apparatus at New York city and Rutgers College, shows that the waves of pressure are almost invariably propagated to the east; the maximum and minimum of pressure occurring at Albany and New York at the same instant.

A record of the thermometer, wind, and rain-fall, has been made at 8 A. M. and 7 P. M., as in former years.

Contributions to the Library, amounting to 83 volumes and pamphlets, have been received from the following institutions and individuals:

Prof. A. Anwers, Leipzig, 2.
Prof. S. Newcomb, U. S. N. Observatory, 2.
Regents of the University, New York, 4.
Prof. W. De La Rue, London, 1.
J. G. Barclay, Esq., Leyton Observatory, 1.
Prof. F. Galton, London, 1.
Prof. J. H. C. Coffin, Nautical Almanac office, 2.
Smithsonian Institution, 2.
American Geographical and Statistical Society, 11.
Dr. Howard Townsend, Albany, 1.
H. A. Clum, Esq., Rochester, 1.
Prof. C. A. Lyman, Yale College, 1.

Chamber of Commerce, New York city, 1.
Rev. Robert Main, Radcliffe Observatory, Oxford, 1.
Royal University of Norway, 9.
Prof. G. B. Airy, Greenwich Observatory, 3.
Royal Observatory, Milan, 2.
Prof. G. V. Schiaparelli, 2.
Prof. Fr. Carlini, Milan, 1.
Prof. Fr. M. Karlinski, Cracow, 1.
Prof. A. F. D. Wackerbarth, Upsal, 1.
Prof. Teodor Gutzeit, Riga, 1.
Royal Meteorological Institute, Utrecht, 3.
Dr. F. B. Hough, Albany, 1.
Department of Agriculture, Washington, 1.
M. Pierre Béron, Paris, 2.
S. W. Robinson, C. E., Detroit, 5.
Connecticut Academy, New Haven, 1.
Santiago Observatory, Chili, 1.
Prof. Newton, New Haven, 1.
Prof. Grimes, Albion, 1.
Royal Observatory, Belgium, 2.
Prof. A. Quetelet, Royal Observatory, Brussels, 7.
Prof. Ernest Quetelet, Brussels, 1.
Prof. J. Hartnup, Liverpool, 1.
Prof. C. A. Hengel, Riga, 1.
Prof. C. Bruhns, Leipzig, 1.
Natural History Society, Riga, 1.
Society of St. Quentin, 2.

Mr. Thomas E. McClure was the assistant during the year.

The time signals have been transmitted hourly, over a short wire belonging to the Western Union Telegraph Company. The time is also repeated at noon of each day, over the main line to Buffalo, thereby securing a standard for the whole length of the New York Central railroad.

January 10, 1867. G. W. HOUGH, *Director.*

REPORT FOR 1867.

To the Board of Trustees of the Dudley Observatory:

The following brief report will show the nature of the work done during the past twelve months, as well as the condition of the buildings, instruments, etc., at the beginning of the current year.

Some necessary repairs have been put on the Observatory and dwelling, as the occasion demanded; and they are now both in good condition. The equatorial dome, since the repairs of 1865, has continued in good working order. During the summer a few preliminary observations were made with the thirteen inch Equatorial, on the measurement of close double stars, the distance of whose components was less than one second of space. Although the objective is not entirely achromatic, yet on ordinary observing nights we found no difficulty in distinctly separating some marked in "Struve's" great catalogue, as very difficult. It is our intention, as time will permit, to carefully remeasure "Struve's" list of close doubles, for the purpose of ascertaining whether any change has taken place since the publication of his results.

The new rule adopted early in the present season, in regard to the admission of visitors on only two nights in the week, enables us to give more attention to work with the Equatorial. Strangers from abroad, however, as heretofore, have been admitted at all times. It is believed, from the experi-
he past summer, that two nights in each week are
accommodate all citizens who are interested in
topics.

The Olcott Meridian Circle has been in constant use on every clear night throughout the year. Our general observations have been on standard stars, asteroids and planets. But little additional zone work on faint stars has been accomplished, owing to our small working force. It is hoped, however, that we will soon be in a condition to complete and publish the observations on the zones, extending from 0 to 10′ south declension, and from 0h. to 24h. right ascension. We are the more anxious to do so, since these observations have been made on a plan totally different from any method heretofore adopted by other observatories, viz.: with the declinometer and charting machine. In this work we observe all stars, including twelfth magnitude, together with a large number of the thirteenth. By means of the charting machine, a perfect map of the stars observed is secured at the time of observation, without additional labor. The full description of these methods have been published in volume I of the "Annals of the Dudley Observatory."

The Transit instrument has been used occasionally for the with the United States Coast Survey station at Washington, and the observatories of Washington and Cambridge, for the purpose of getting a new determination of the longitude between the different stations. The method adopted in this work was, to alternately put the standard clock of each station on the circuit, so that the "beats" or oscillations of the pendulum were recorded at every station at the same instant, by means of telegraphic connection. We are under obligations to the officers of the Western Union Telegraph Company at this place, for their courtesy in extending all the necessary facilities during the progress of the work. The final results of this work have not yet been deduced. When completed, however, it will enable us to refer our longitude directly to Greenwich; since the Coast Survey has already determined the difference of longitude between Greenwich and a station on this side, by means of the Atlantic cable.

The great meteoric shower of November 14th was successfully observed here. Telegraphic reports were forwarded at the time, to the New York Herald and Tribune; and more detailed accounts were published in the principal Albany papers. The observations in detail, accompanied with a diagram illustrating the rate of fall of the meteors from minute to minute during the progress of the shower, has appeared in the January number of Silliman's Journal. When the shower was at its maximum, the rate of fall observed here was nearly fifty per minute or three thousand per hour. The recurrence of this phenomenon in the eastern hemisphere in 1832 and 1866, and in the western hemisphere in 1833 and 1867, has fully established the theory that the phenomenon is periodical once in thirty-four years.

In the early part of the current year, the Schentz calcu-
ngine was taken down, cleaned, and every portion of
nism thoroughly adjusted. Additional mechanism
added, in the manner pointed out in a previous

report, for overcoming the inertia of the numbered rings during the process of addition. It was found to work satisfactorily, and has been used occasionally for computing ephemerides of the minor planets, and constructing tables used in the reduction of our observations.

The "time" wire running from the Observatory to the city, was taken charge of by the Western Union Company, and we were put on a short line of wire, including the telegraph offices in the vicinity of this city, Troy, etc. The mean time clock was arranged to send "time" signals every hour, or only at noon, according to the arrangement of the switches. An additional mechanism was also added for interpreting the signals. The method is as follows: At one minute and ten seconds preceding the hour, the clock begins to "beat" the time every alternate second up to sixty; immediately after which the dispatch "Dudley Observatory time" is transmitted by the clock. The same signals and dispatch are again transmitted the next minute. This process is repeated every hour, or only at noon, as may be desired. The "time ball," as heretofore, is in charge of Mr. Benjamin Marsh, and the New York Central railroad are also supplied with the time through the same source.

The subject of meteorology has engaged a share of our attention. Although of the highest importance to the public generally, yet but few fundamental laws governing atmospheric phenomena have been established. The elaborate system of storm warnings, carried on for a number of years under the patronage of the English government, has finally been abandoned; for the reason that the greater part of the "forecasts" or predictions were not based on scientific principles.

It is generally conceded that many of the great storms on the Atlantic coast originate in the west, and travel from west to east. The waves of atmospheric pressure are generally propagated from west to east, and it is natural to suppose that storms will follow a similar direction. The rate of propagation is not definitely known. We have shown, from a comparison of the continuous barometric records made at the Chamber of Commerce, New York city, and the Dudley Observatory, that for stations on the same meridian, the waves of pressure are simultaneous. The comparison of continuous barometric records made at Dartmouth College show, on the contrary, that for stations differing in longitude, the barometer invariably reaches its highest and lowest points soonest at the western station. A short time since we received some continuous barometric observations made at Berne, Switzerland. On plotting the curve of pressure for the months of January and February, 1866, and comparing with our own observations, it was surmised that the waves of pressure were about seventeen days in passing between the two stations; the difference of longitude being about six hours. Further researches in this direction will probably throw some light on the origin and progress of great storms.

This subject is one of unusual interest, but can only be successfully studied by means of continuous automatic records of atmospheric changes. In the United States, possessing so wide an expanse of territory, we have great facilities for studying meteorological phenomena, provided a sufficient number of stations are established at suitable points, where continuous records are made by means of automatic instruments. It is our conviction that isolated observations have ceased to be of value for studying the laws governing atmospheric phenomena; for while almost every department of physical science has made giant strides, meteorology has remained in nearly the same condition as it was half a century ago.

Nearly two years since we pointed out the intimate connection between atmospheric pressure and the direction of the wind.

For the more thorough study of this subject, the plans and drawings for an automatic anemometer have been completed, and a portion of the mechanism already constructed. When finished, this instrument will record the velocity, in the form of a continuous curve, and print the results hourly in miles. The direction also will be printed hourly, to eight points of the compass. The revolving cups and vane are located on the dwelling, while the recording and printing apparatus is placed in the Observatory, 320 feet distant. Electricity is the agent by which the varying changes of the wind are printed and registered. Two electro-magnets are found sufficient for recording the direction, to 360 points or single degrees.

Mr. Thomas E. McClure was my assistant during the year.

The Library has received contributions from foreign and American institutions and individuals, to the extent of about fifty volumes. The donations from abroad have gradually increased from year to year. Publications are now received from most of the principal European observatories and

REPORT FOR 1868.

To the Board of Trustees of the Dudley Observatory:

The following brief report will show the nature of the work done during the past twelve months, as well as the condition of the buildings and instruments at the beginning of the current year. The buildings have been kept in good order, by making the necessary repairs when needed. The instruments are all in perfect working condition.

During the early part of the summer, the declinometer and charting machine, which have hitherto been used in connection with the Olcott meridian circle, were removed and attached to the transit, as originally intended. By this change the circle is left entirely free for the regular meridian work. The declinometer is used exclusively for zone observations, and the employment of the transit for this purpose greatly facilitates the work. As it always remains in one position, observations can be made without much preliminary preparation. As the transit was not provided with divided circles and microscopes, we divided a small arc of two degrees on a radius of five feet, for which we fitted up an extra microscope which happened to be at hand; so that for this range we readily read fractions of a second of arc. This arrangement is found peculiarly valuable for testing the declinometer and setting the instrument in the proper position, previous to commencing the observations. A few zones have been observed and charted during the year. We hope soon to complete the zone began in 1863, extending from 0 hours to 24 hours right ascension, and from the equator to ten minutes south declination. This zone will contain upward of five thousand stars and more than fifteen thousand observations.

The regular transit and zenith distance observations on standard stars, fundamental zone stars and minor planets have been made on every clear evening, with the Olcott meridian circle. Occasional observations on double stars and nebulæ have been made with the equatorial.

At the beginning of the past year, we undertook a series of experiments on galvanic batteries, extending over several months, for the purpose of investigating the cause of the decline in the strength of the electric current, after the battery had been in operation for a long period. It is well known that since the invention of the American method of recording transits, the galvanic battery has become one of the necessary instruments in every first class observatory. The application of electricity also to the registration of meteorological phenomena makes it desirable to secure the best form of battery, as well as to be able to know what is the difficulty, when the battery begins to fail in its work. The results of my investigations have been briefly given to scientists. We will here only state a few of the leading conclusions reached:

1st. In the sulphate of copper battery (Daniell's form), the principal cause of decline in the strength of the electric current, is due to the formation of sulphate of zinc.

2d. The quantity of electricity flowing in the external circuit, depends on the specific gravity of the sulphate of zinc.

3d. When the sulphate of zinc approaches saturation, polarization takes place in the battery itself; and although the electro-motive force remains the same, the internal resistance may be increased more than a hundred times.

4th. The sulphate of zinc (or any fluid about the zinc) is useful only as a conductor of electricity.

5th. The copper or negative metal is useful only as a conductor; since it can be replaced by any other metal, even zinc itself.

6th. The internal resistance of the battery has been separated in two parts, viz.: that due to the porous cell, and that due to the liquids employed. The specific resistance of the liquids was found to be 13; that for a small clay cell 17, and for a leather cell 7. Since the resistance of the leather cell is less than one-half that of a clay cell, we have used it in the construction of batteries, as the quantity of electricity is nearly doubled, without any increase of surface. For the negative metal, in place of the copper, heretofore employed, we have used sheet lead.

These investigations have enabled us to compute, with great precision, the length of time a battery will generate its normal quantity of electricity, provided the amount of electricity flowing in the external circuit is known, and the capacity of the vessel holding the sulphate of zinc is determined. The specific gravity of the sulphate of zinc should not be less than 15 degrees nor more than 38 degrees Baumé.

A new mechanism for the more thorough investigation of galvanic batteries has been devised, but not yet constructed, by which the quantity of electricity flowing in the external circuit will be recorded, in the form of a curve, so long as the battery is in action. This subject is one of great interest and importance, and we hope, at some future time, to continue our investigations.

The subject of meteorology, as heretofore, has engaged a portion of our time. Three new automatic printing barometers have been constructed during the year: one for Lafayette College, Easton, Pa.; one for Clarence Rathbone, Esq., and another for the Smithsonian Institution, Washington. The new machine built for the Observatory, is the most complete of any apparatus of the kind that has hitherto been attempted, either in this country or in Europe. In addition to the printed records and curve sheets, it indicates the *total disturbance* every hour, in the form of a curve. As the element of total disturbance is a new one, growing out of the use of this mechanism, and as we regard it as one of the most important indications of the barometer, it is thought desirable to discuss the subject more in detail. The atmosphere is continually in a state of agitation; the pressure varies from hour to hour, and even from minute to minute, the amount of this agitation being measured by the pulsations made by the barometric column. We have heretofore shown that these pulsations vary in amount, from day to day and month to month. The discussion of two years of observations, shows that the greatest disturbance is felt in March and the least in June; the curve for the two years being remarkably uniform. As it is important to know at what hours of the day the greatest and least disturbance occurs, we decided to add the apparatus before mentioned.

The method of automatic registration, which we devised in 1864, has answered our most sanguine expectations. Prof. Young, of Dartmouth College, gives the probable error of the barometric height for a single printed result, as less than the three-thousandths of an inch, a degree of accuracy never before attained by any other method.

The machine for recording the direction and velocity of the wind has been in operation during the past year, but the printing portion of the mechanism is not yet entirely completed. The principal used for recording direction is new. A single wire, together with two electro-magnets, is found sufficient for recording the direction to any number of points. Heretofore, in all machines of this kind, as many wires and magnets were necessary as there were points recorded.

The brilliant meteoric shower of November 13th and 14th was well observed. It began 11 hours and 30 minutes P. M., and probably continued until 10 A. M. Our observations were especially confined to the determination of the rate of fall and the time of flight. The maximum rate of fall, for one observer, was twelve per minute, and the time of maximum 5 o'clock, being about half an hour later than for 1867. The time of flight of more than one hundred meteors was recorded by electricity on the chronograph, in the manner adopted in 1863. The maximum of appearance was nine-tenths of a second, and the minimum three-tenths, the mean being sixty-five hundredths of a second; not differing materially from the same quantities deduced in 1863. The most remarkable feature during the display was the permanence of the train after the meteor exploded. Advantage was taken of this circumstance to examine them with a telescope. As seen through the comet-seeker, the train appeared as a brilliant band of light, which gradually changed its form, assuming, before its disappearance, a great variety of shapes; one resembling a spear, another doubled on itself, forming a coil. In general the train first became bent, appearing like a piece of serpentine braid, after which it separated into different pieces; through the telescope, the train of one remained visible more than ten minutes. During the examination of the trains, in a number of instances, other meteors were seen to shoot across the fields of view, appearing in the telescope of great brilliancy. The recurrence of this phenomena with such remarkable regularity, during the past three years, fully demonstrate the truth of the theory that there exists a ring of "*debris*" circulating around the sun, in which the earth plunges at every revolution.

On the completion of the fire alarm telegraph, a wire was extended from the central station to the Observatory. The mean time, once during every hour, both day and night, is sent over this wire, as well as over one belonging to the W[illegible]on Telegraph Company. The apparatus for sending the time is entirely automatic, the clock being arranged with such mechanism, as to require no attention from the observer. From the central station, the city bells are struck, on the true Observatory time, at 9 A. M. and 9 P. M. And from the telegraph office the time is repeated, at noon each day, over the line extending to Buffalo, for the regulation of the clocks of the New York Central railroad.

On the 1st of September, Mr. McClure resigned. His place has been filled by Mr. H. L. Foreman.

As in former years, a record has been kept of the barometer, thermometer, wind and rain fall.

The donations to the Library have been steadily increasing from year to year. Publications are received from the principal European Observatories and learned societies.

G. W. HOUGH, *Director.*

January 2, 1869.

REPORT FOR 1869.

To the Board of Trustees of the Dudley Observatory:

The following report will show the nature of the work done during the past twelve months; as also the condition of the buildings and instruments at the beginning of the current year.

The Observatory and dwelling have received the usual annual examination, and are both in good condition. During the past summer an addition was built to the house occupied by the janitor, at a cost of about $300.

On the 16th of December, the gas works connected with the Observatory were destroyed, by the explosion of a retort and subsequent burning of the building. During the coming spring, it is proposed to lay pipe to Pearl street, to connect with the city main gas pipe.

As all our instruments are arranged for illuminating with gas, it has been thought advisable not to make any radical changes for the purpose of burning oil, since the cost of such changes would be considerable, and not at all commensurate with the amount of observing during the winter months. We have, however, arranged the transit for observation; but the Olcott meridian circle requires so much light that we do not propose to make any change; and for special observations the microscopes and wires can be illuminated by hand lamps. The principal observations on standard stars, fundamental zone stars and small planets have, as heretofore, been made with the Olcott meridian circle.

Observations on zone stars have been made with the transit. Last year the declinometer apparatus was changed from the meridian circle to the transit. By this arrangement we are able to observe the same zone on consecutive nights, without making any change in the adjustment of the instrument, which is a decided advantage, since the reductions are more uniform and errors of observation readily detected.

The mean place of the zone stars has heretofore been referred to January 1st, 1863. It is our intention to reduce all to January 1st, 1870, making the latter date the epoch of the catalogue.

In the early portion of the year, considerable time was taken up in preparing for the observation of the total eclipse of August 7th. It was found desirable to construct a chronograph, parallel-wire micrometer, clock, and other apparatus. Our organized party was composed of the following observers:

Prof. David Murray, Rutgers College.
Lewis Swift, Esq., Marathon, N. Y.
Thomas Simons, Esq., New York city.
Prof. L. F. M. Easterday, Nokomis, Ill.
J. C. House, Esq., Waterford.

On our arrival, President Thomas Hill, Cambridge; Gen. A. J. Keifer, Springfield, Ohio, and Prof. A. H. Smith, Mattoon, Ill., joined our party.

The eclipse was successfully observed, and the results have been published by the Albany Institute, making a pamphlet of 33 pages, including two wood cuts and one engraving.

During the months of April and May, a series of experiments was instituted for the purpose of investigating the so-called velocity of the electric current over telegraph wires. Through the courtesies of the Western Union Telegraph Company, and Mr. C. S. Jones, the manager of the Albany office, the necessary wires and battery were placed at our disposal. It has heretofore been assumed that the delay in the transmission of a signal over a long line of telegraph wire, was due to the time required for the electric fluid to pass over such interval. This view of the subject has been entertained for the past twenty-five years, and numerous experiments have been made to measure the so-called velocity. Without entering into details, our results show that in such experiments no velocity is measured, but only the mechanical force of the current. We have demonstrated, by a mathematical discussion of our results, that this apparent velocity is directly proportional to the *magnetic force* of the current. This conclusion must be regarded as of the highest importance in this department of physics.

The subject of meteorology, as heretofore, has engaged a portion of our time. The automatic printing barometer has been kept in constant operation, and the direction and velocity of the wind have been recorded hourly. These observations have been reduced, and compared with similar ones made at other stations, the results of which will be published. As in former years, a bi-daily record of all the meteorological instruments, the state of the weather and other phenomena, has been made at 8 A. M. and 7 P. M.

The hourly automatic transmission of time has been continued as heretofore. The city bells are now struck from the central station, at 9 A. M. and 9 P. M. of each day. The time is also sent daily over the New York Central and Hudson River, and Susquehanna railroads.

Contributions to the Library, amounting to sixty volumes and pamphlets, have been received from the principal observatories and institutions.

Mr. H. L. Foreman was the assistant during the year.

As heretofore, visitors have been admitted on Tuesday and Saturday nights of each week, and daily from 9 A. M. to 5 P. M.

G. W. HOUGH, *Director.*

February 1, 1870.

REPORT FOR 1870.

To the Board of Trustees of the Dudley Observatory:

GENTLEMEN.—The following report will exhibit the nature of the work carried on during the past year.

The buildings are in good repair, and the instruments are all in perfect working order.

The first half of the year was devoted to purely astronomical work. After the first of June, however, the larger share of our time was given to the reduction and discussion of meteorological observations for our forthcoming volume, Annals of the Dudley Observatory, volume 2.

The Legislature of 1869–70 passed a resolution authorizing the publication of a report by the Dudley Observatory, for the use of its members, the Board of Regents and the Dudley Observatory.

At the beginning of the past year we reduced all the observations of faint stars near the region of the equator, made with the Olcott meridian circle and transit instrument, during the last five years, for the purpose of forming a standard catalogue for our zone observations. This catalogue enables us to refer the zone observed on any night to the standard positions adopted, and complete its final reduction without any additional observations.

The zone work to which I have referred in previous reports, was progressing satisfactorily until it was necessary to discontinue it for the time being, for the preparation of our second volume. It is our purpose to complete the unfinished zones during the present year, and make it the basis of our next publication. It may be of interest to know, that we have already made more than twenty thousand observations on zone stars, besides many thousands with the Olcott meridian circle. The observations on planets, comets and other special phenomena, have been published in the principal foreign astronomical periodicals.

For the determination of almost any result, many thousands of observations are needed, for which, at first sight, there would seem to be no immediate use. As an illustration: The solar parallax, or distance of the sun, has engaged the attention of the whole astronomical world on many occasions during the past century; and yet, the distance of our central luminary has not been definitely ascertained. The zones to which we have referred extend from the equator southward, for which there is no accurate catalogue. Our first series extend over an arc of ten minutes of declination; in some parts of the zone the small stars are so numerous that more than four hundred pass the field of the telescope in one hour of time.

In this work, we have, heretofore, determined the position of all stars visible, usually comprised between the ninth and fourteenth magnitudes. In future, in order to hasten its completion, we shall omit the fourteenth and faint thirteenth magnitudes, and secure all above the thirteenth; this will give from one hundred to two hundred stars for one hour of right ascension, and an arc of ten minutes of declination. Such a catalogue will be of great value in the observation of the small planets, of which at present there are more than one hundred, and new ones are constantly being added. As these bodies probably amount to some hundreds, of which the great majority are very faint, a catalogue of all stars visible near the region of the ecliptic, will greatly facilitate their discovery.

Observations on standard stars and others have been made on every clear night with the Olcott meridian circle. The transit instrument has been used exclusively for zone work.

Observations have also been made with the equatorial. This instrument, as heretofore, has been in use on Tuesday and Saturday nights of each week, usually under the care of the janitor, in exhibiting objects of interest to visitors. The public interest does not seem to have materially diminished, as the number of visitors was as numerous as in former years. The rule adopted two years since, limiting the visiting nights to two in each week, has been found difficult to rigidly enforce. It has, however, been of great advantage to us, as it leaves our whole working force free at times when they are all needed. We have always, however, admitted strangers on any night when observations were in progress.

The automatic transmission of time by means of mechanism connected with the mean time clock, has been continued as in former years. The time now is sent hourly, day and night, over two wires, one belonging to the Western Union Telegraph Company, and the other to the city fire alarm. The city bells are struck on true Observatory time, from the central station, at 9 A. M. and 9 P. M. of each day. We are informed that

Albany Institute, 1.
Prof. S. Newcomb, Naval Observatory, 1.
Prof. A. Hall, Naval Observatory, 1.
Royal Observatory, Milan, 1.
Prof. G. V. Schiapparelli, 1.
Royal Institute, Lombardy, 11.
Central Physical Observatory, Russia, 1.
Prof. G. B. Airy, Royal Observatory, Greenwich, 3.
Dr. P. G. Rosen, Pulkova, 1.
Dr. H. Gylden, Pulkova, 2.
Pulkova Observatory, 2.
Prof. Otto Struve, 4.
Prof. Carl Linsser, 1.
Observatory Mariano de St. Fernando.
Dr. Theo. Oppolzer, 3.
Observatory, Santiago, 3.
Royal Observatory, Gottingen, 1.
Swiss Meteorological Observatory, Berne, 2.
Dr. R. Wolf, 2.
Dr. Alex. Moller, Lund, 1.
Dr. H. Wild, Central Physical Observatory, Russia, 3.
Radcliffe Observatory, 2.
Central Meteorological Observatory, Montsouris, 2.
Dr. M. A. F. Prestel, Emden, 1.
Prof. H. Mohn, Sweden, 1.
Prof. O. A. L. Pike, Christiania, 1.
Prof. E. Plantamon, Geneva, 1.
Natural History Society, Emden, 1.
Dr. F. Karlinski, Cracrow, 5.
Prof. Ad. Quetelet, Brussels, 8.
Royal Observatory, Brussels, 1.
Royal Meteorological Institute, Netherlands, Utrecht, 1.
Rev. Robert Main, Radcliffe Observatory, 1.

Messrs. Thomas E. McClure and H. L. Foreman have been the assistants during the year.

The following papers were published at the beginning of the year:

Remarks on the Galvanic Battery, 13 pages.

On the Velocity of the Electric Current over Telegraph Wires, 12 pages.

The following papers were prepared and read before public associations, but have not yet been printed:

On the Rate of the Sidereal Clock for Two Years, 15 pages.

Description of a New Meteorograph, 15 pages.

On the Relation between Temperature, Pressure, Wind and Rain, 10 pages.

The meteorological observations have been continued as in former years. The height of the barometer is recorded continuously, and also printed hourly. The velocity of the wind is recorded hourly, and the direction printed for the same interval. The thermometer has been read three times daily, and for the last half of the year it has been recorded

A peculiar feature of the volume will be the publication of thirty-six lithographic sheets, exhibiting the state of the weather, and the indications of the different instruments for every hour of the day and night, extending over a period of three years. These sheets will show at a glance the state of the weather on any day or hour during this time. We believe this feature of the work will be of interest to the public generally, as well as to scientists. So far as we are aware, no work has hitherto been published in this form, extending over any considerable period.

Early in the year we devised a new method and mechanism for recording the various meteorological phenomena. This mechanism is not designed to supersede the automatic printing instruments which have been in use for the past five years, but to be employed at places where the more complete and complicated mechanism would be difficult to manage. By the new method, the barometer, thermometer or other instruments are recorded hourly, in the form of a curve. The machinery for making the records consists essentially of a half-second pendulum clock, which elevates and depresses a registering lever at definite intervals. The battery force is reduced to a minimum ; it being only used for unlocking the registering hammer.

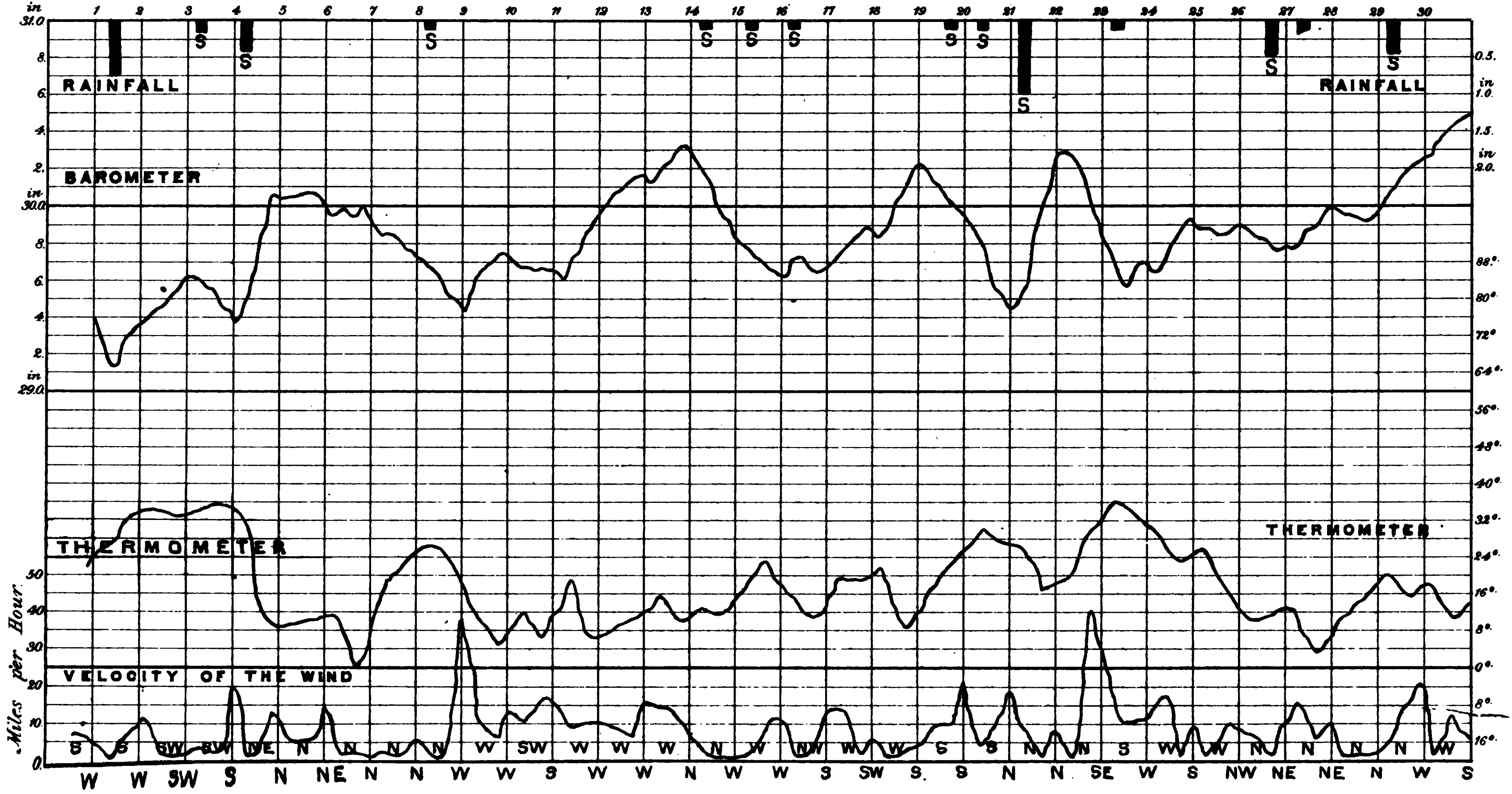
At the request of Gen. Myer, the chief signal officer at Washington, one of these machines was constructed for his office, for recording hourly three separate instruments, viz. : the barometer, thermometer and west bulb thermometer.

A complete description of the method and mechanism will shortly be published. Its small cost and simplicity, it is believed, will favorably commend it to meteorologists.

G. W. HOUGH, *Director.*

February 20, 1871.

DUDLEY OBSERVATORY METEOROLOGICAL RECORDS JANUARY 1868.



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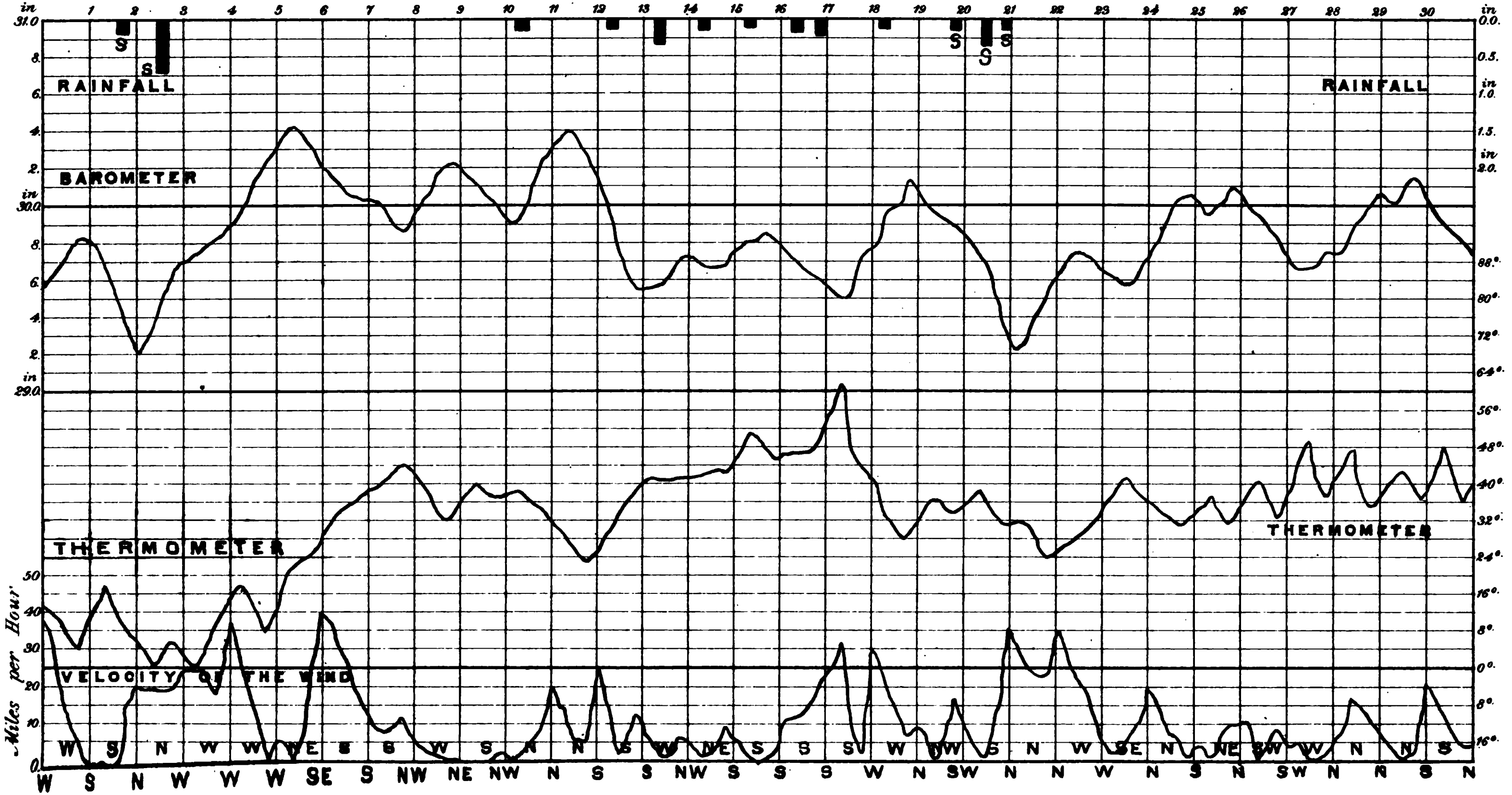

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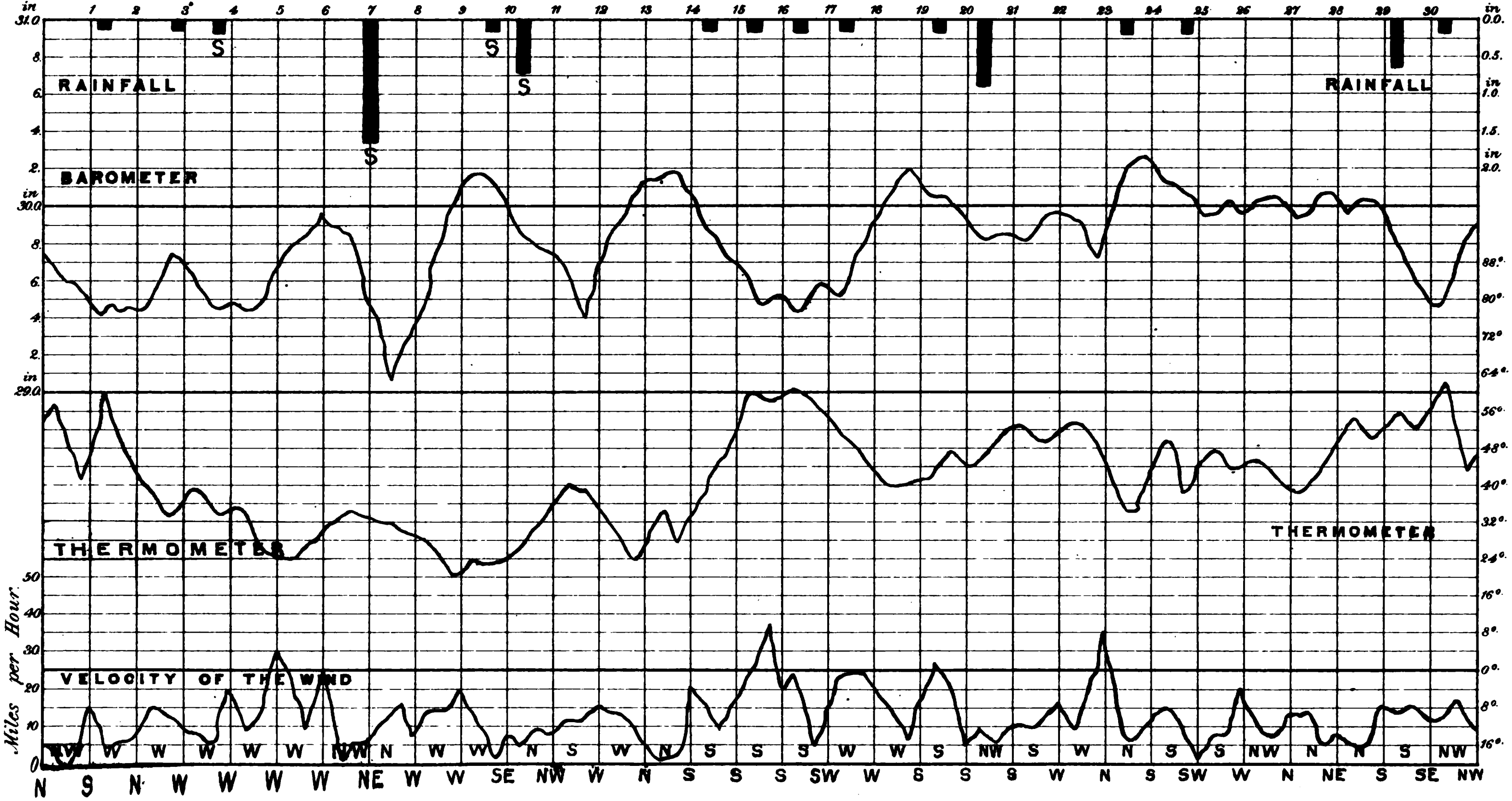

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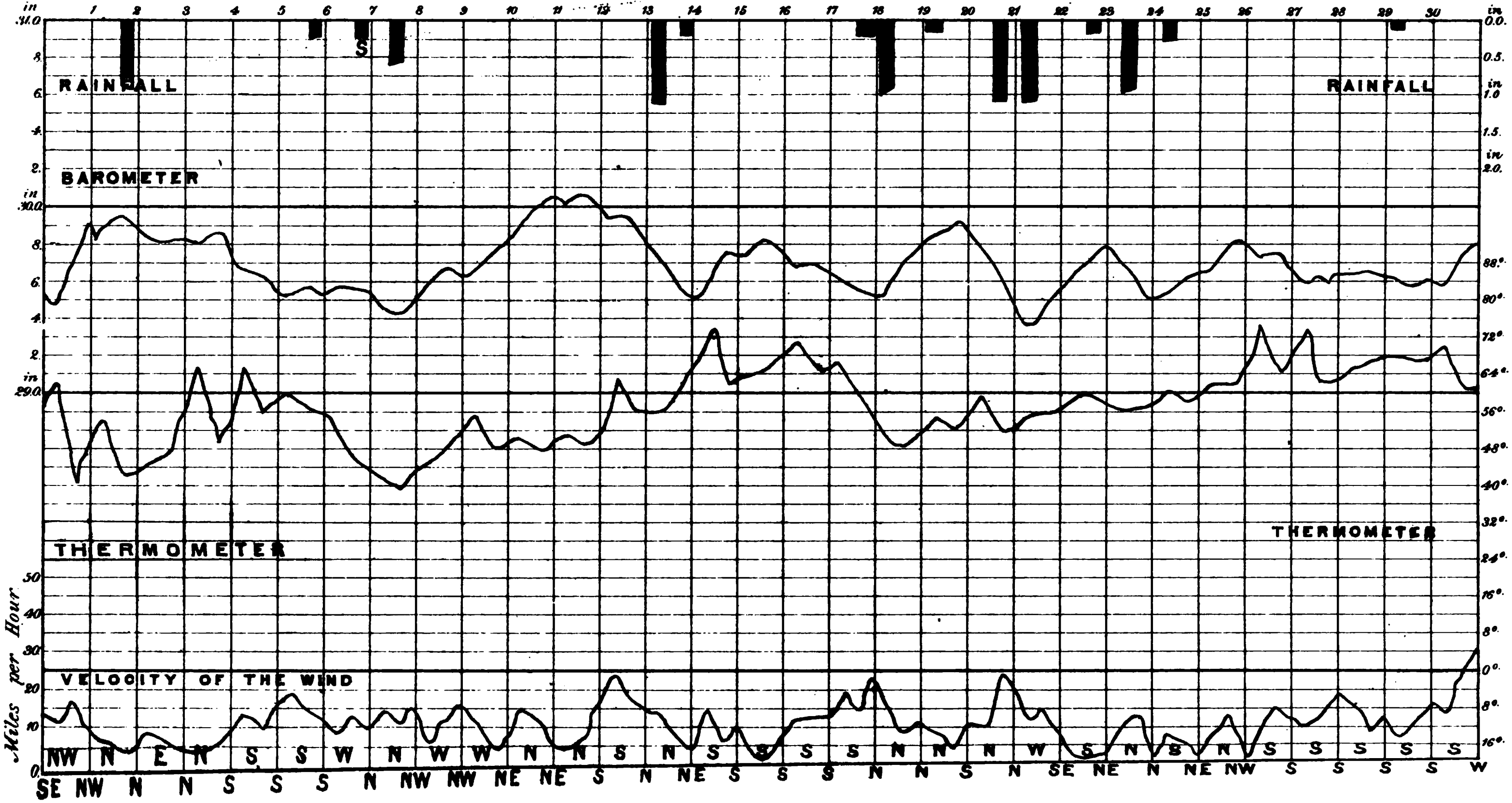

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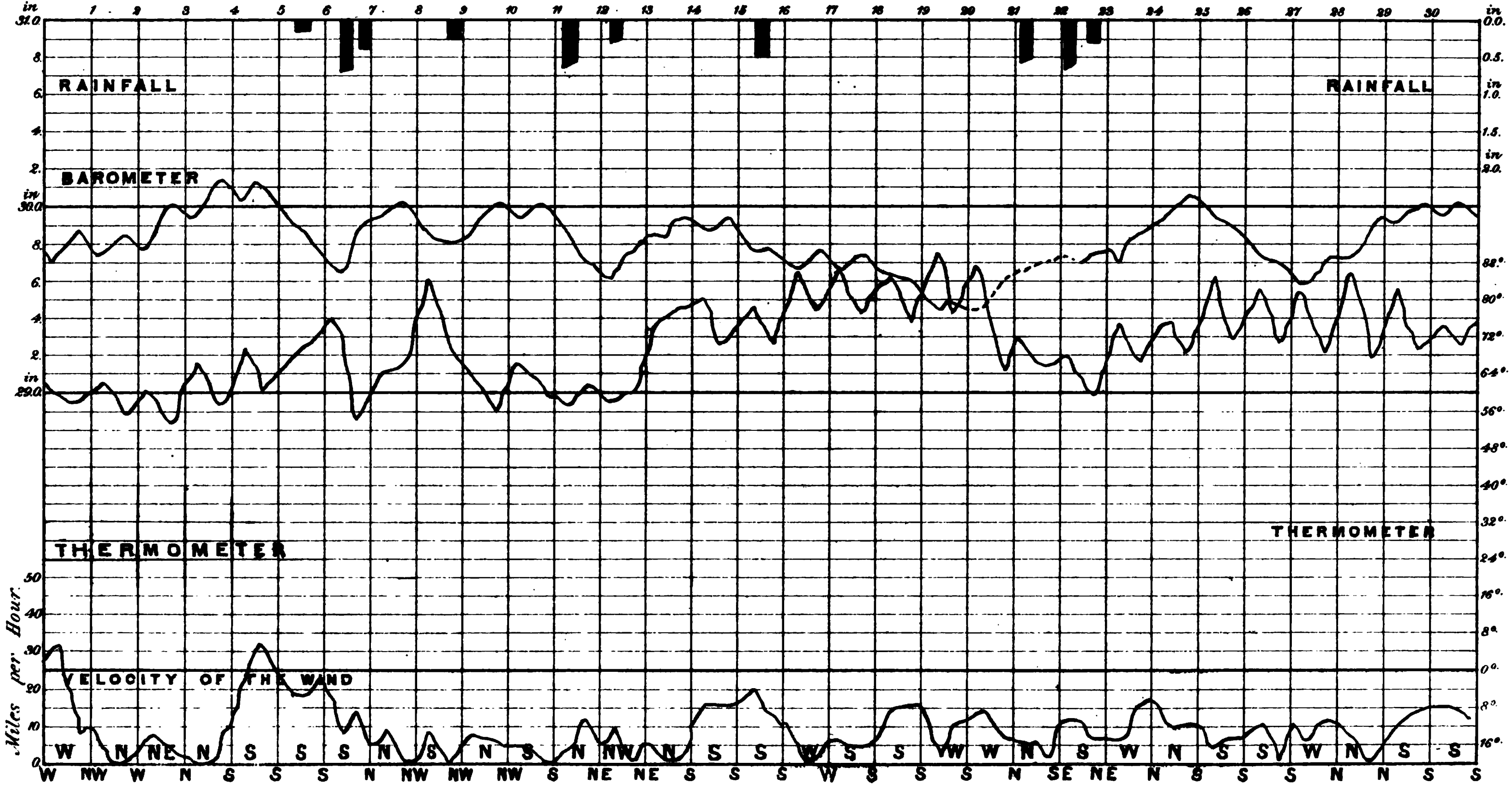

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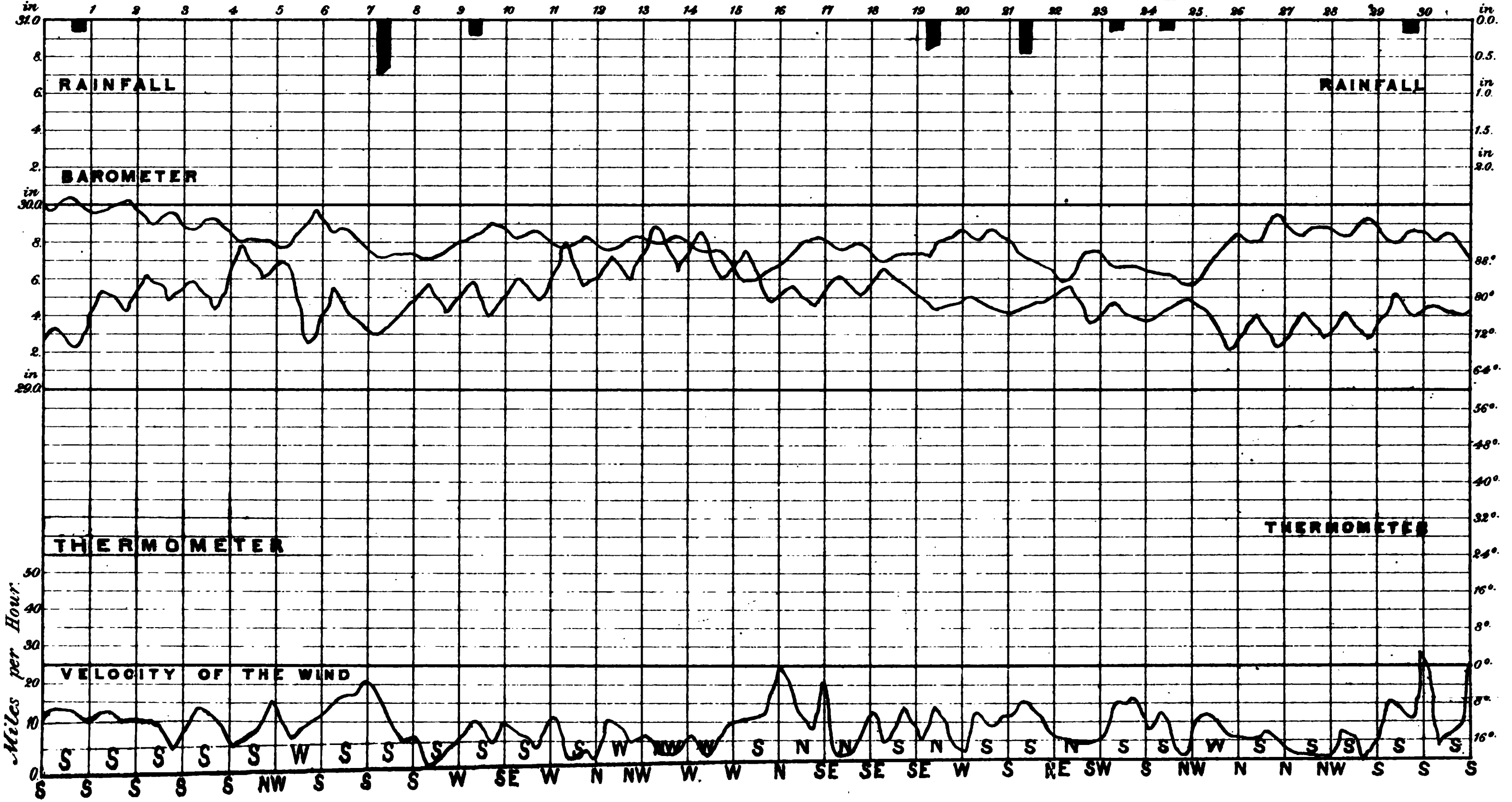

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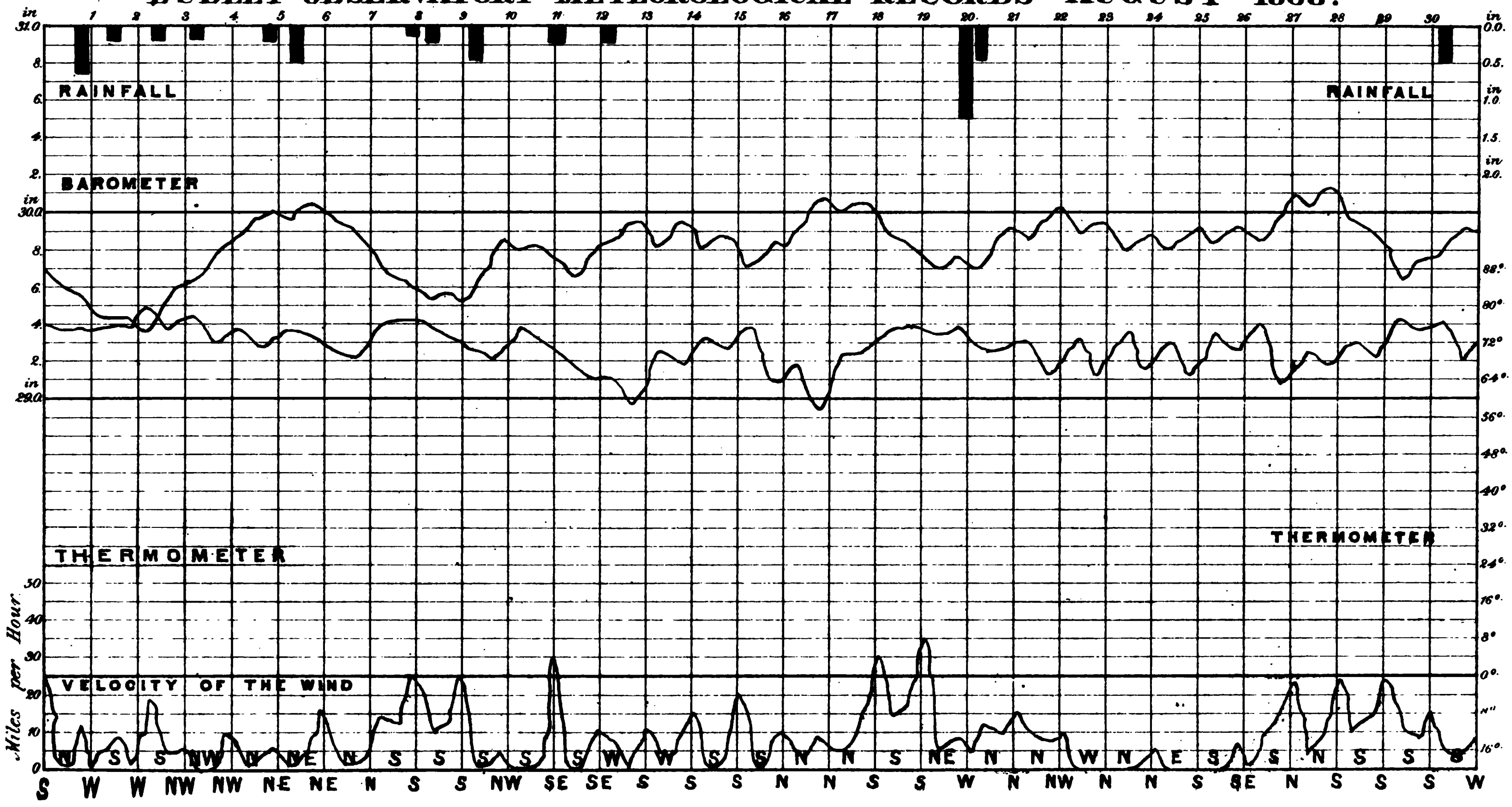

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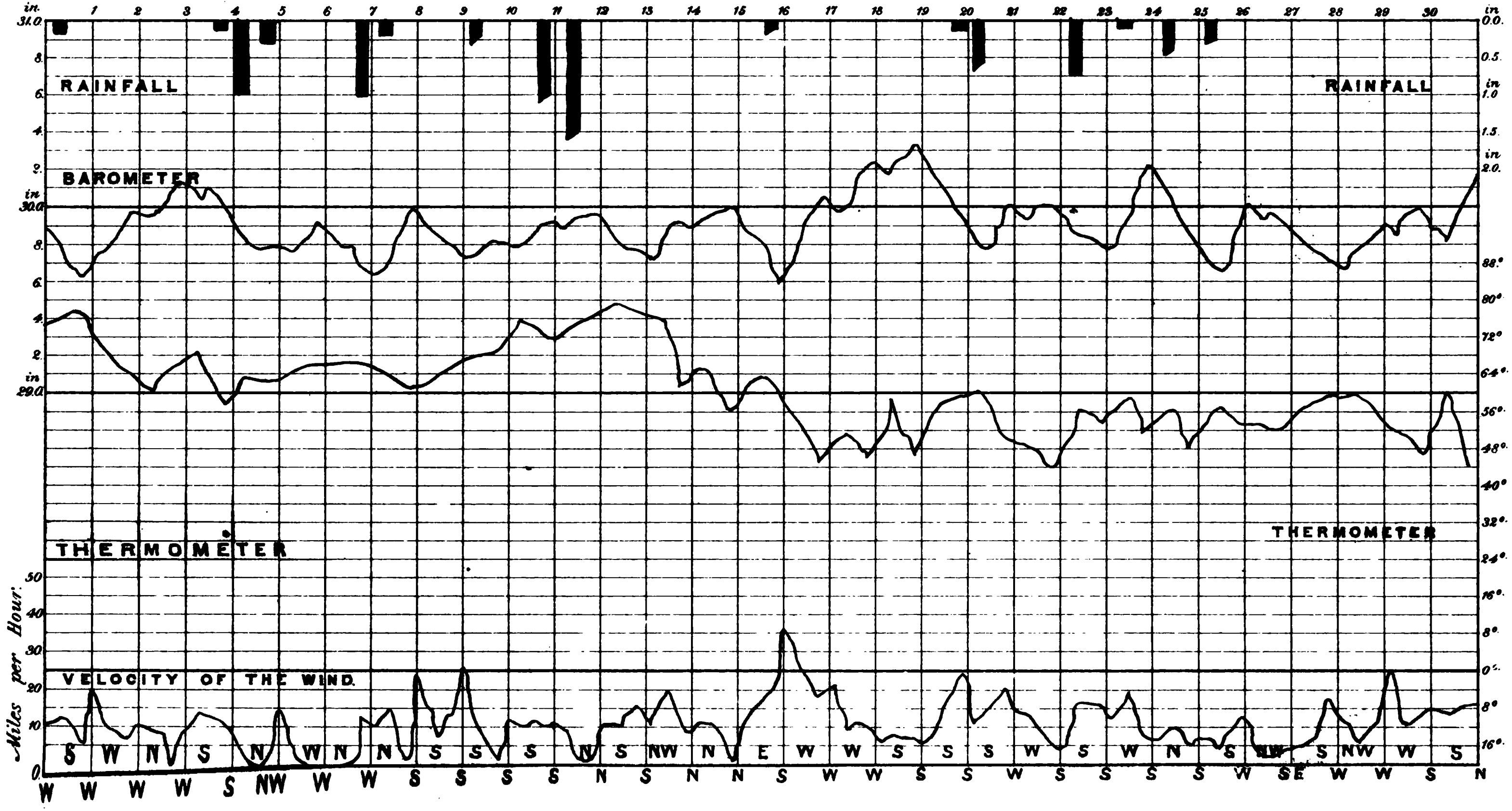

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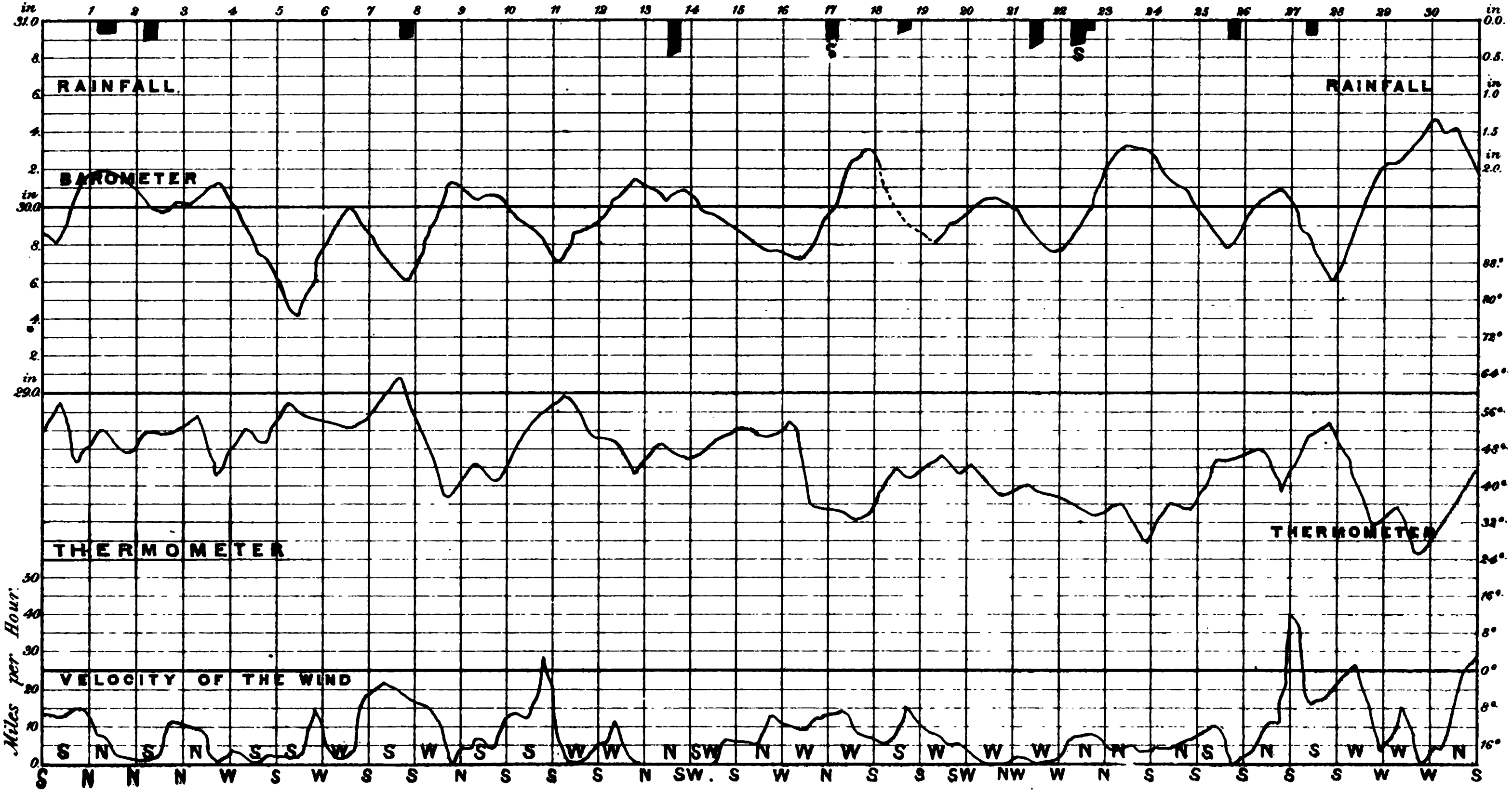

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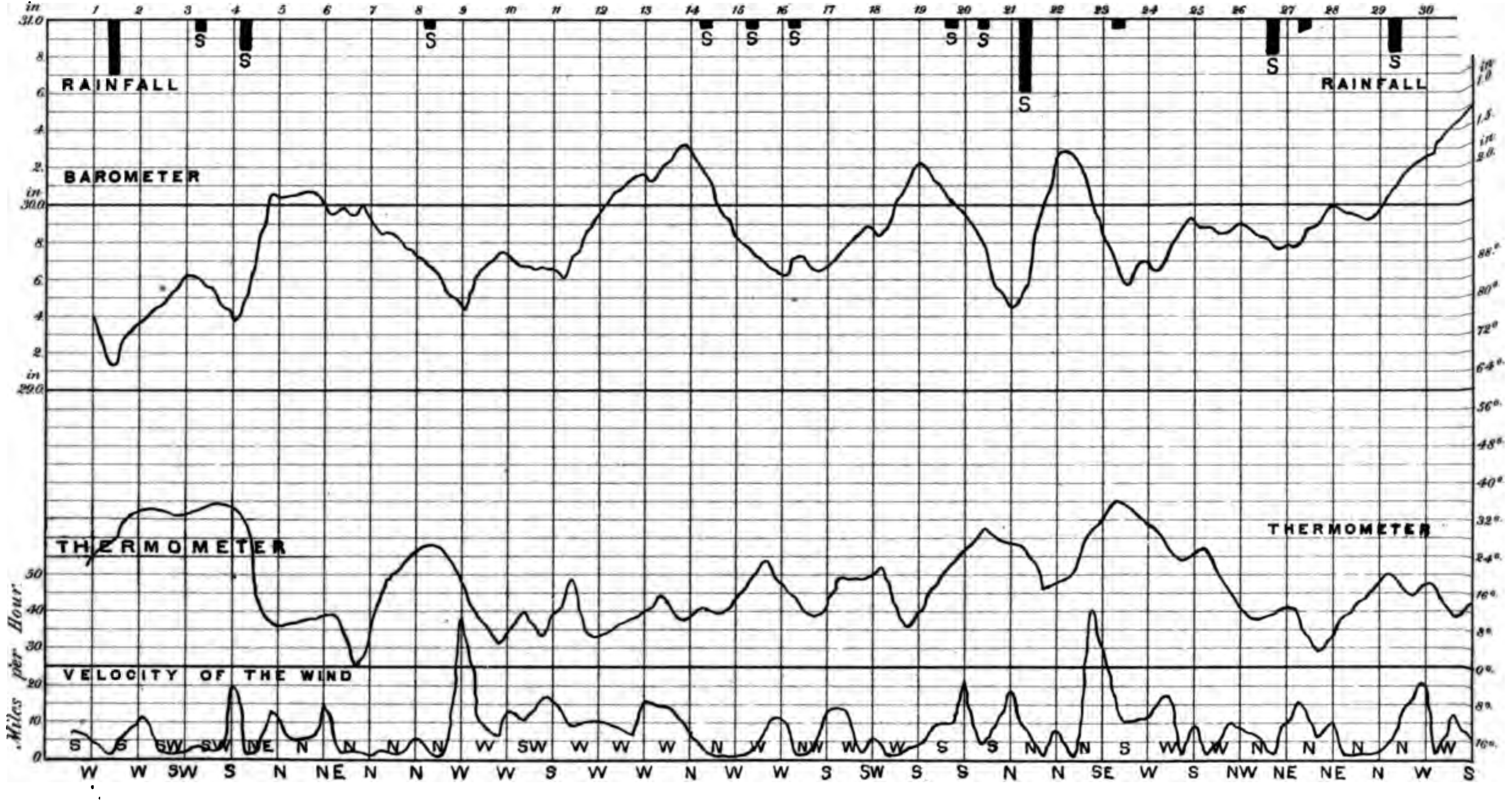

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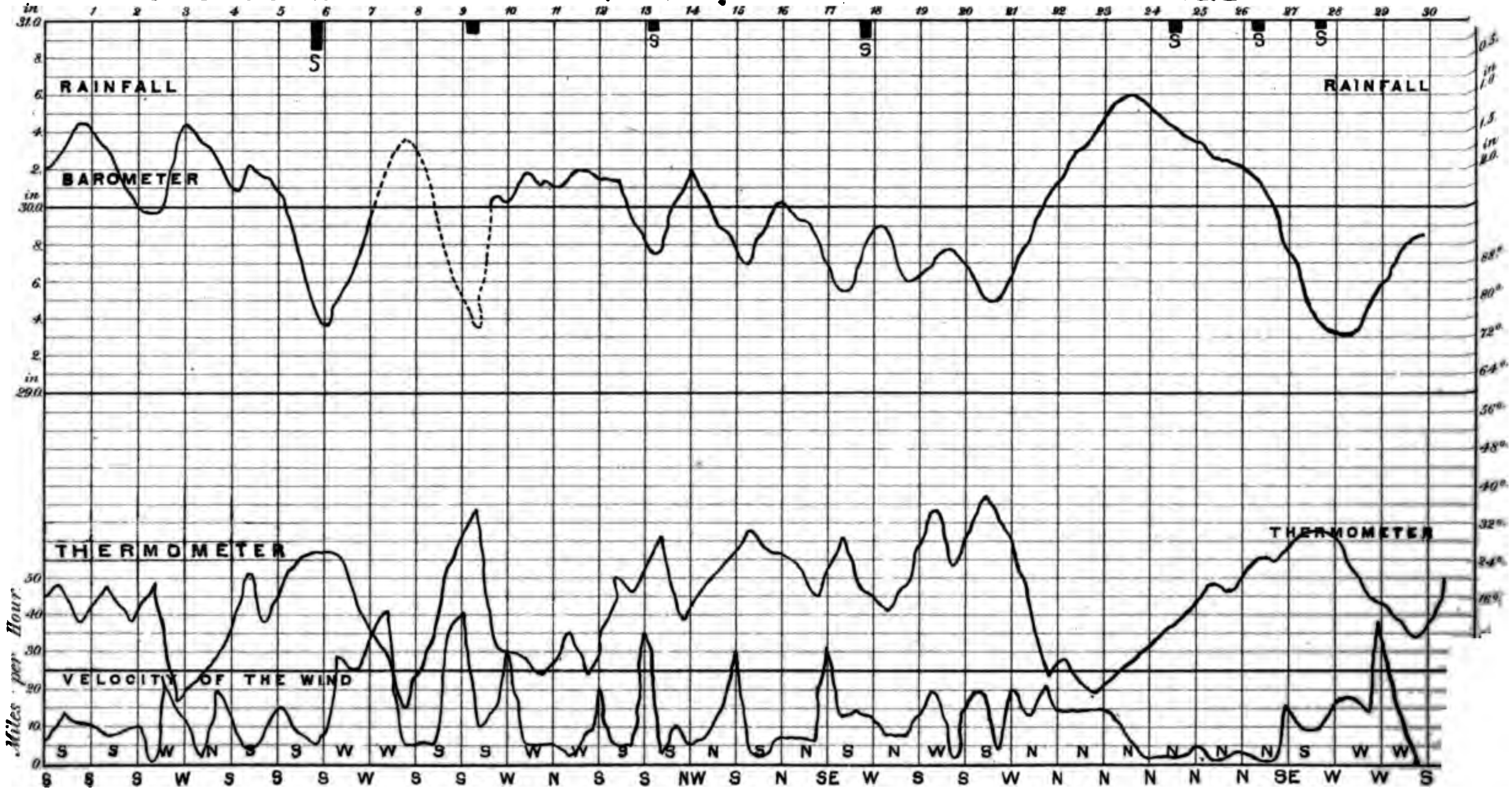

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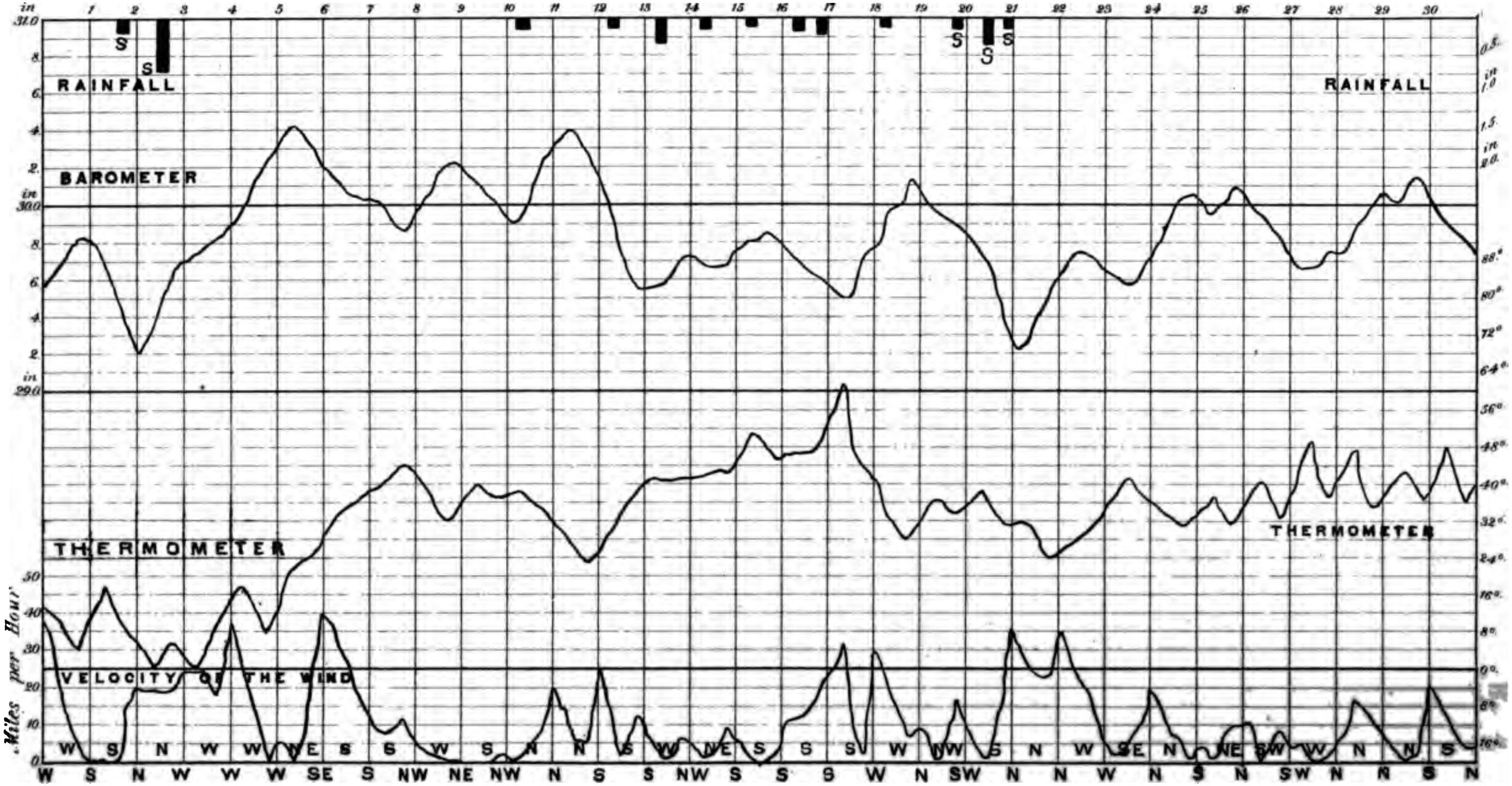

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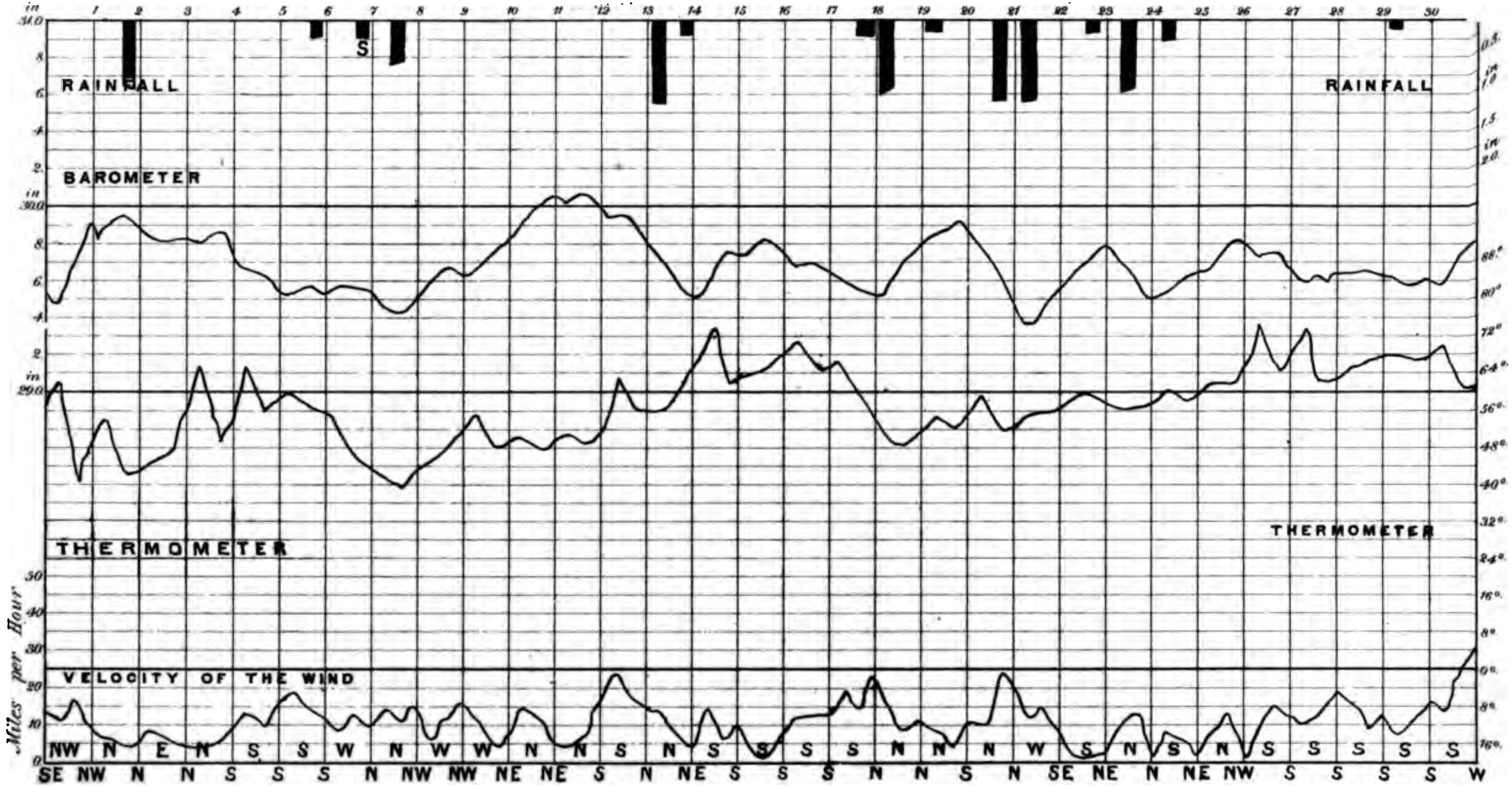

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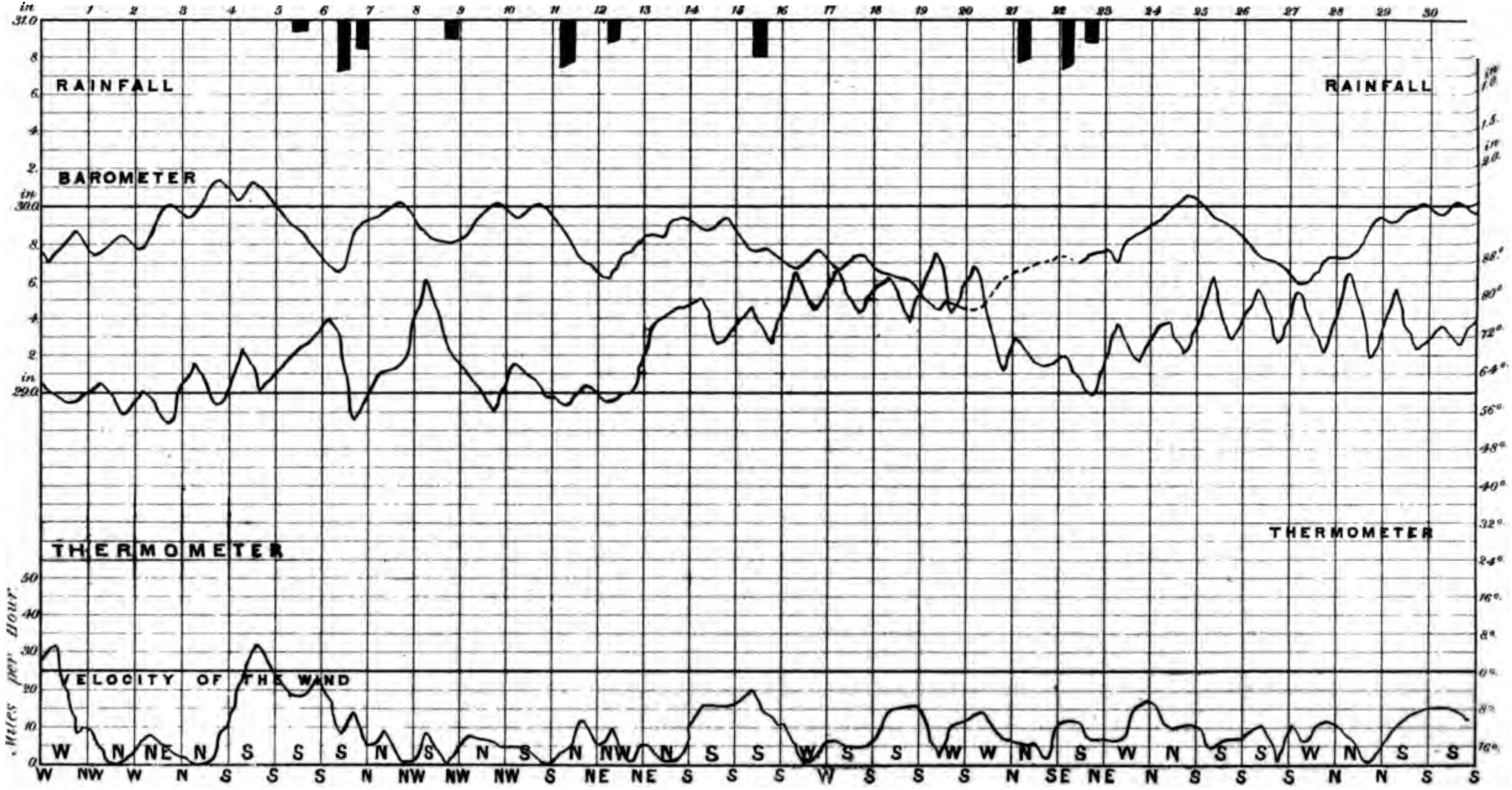

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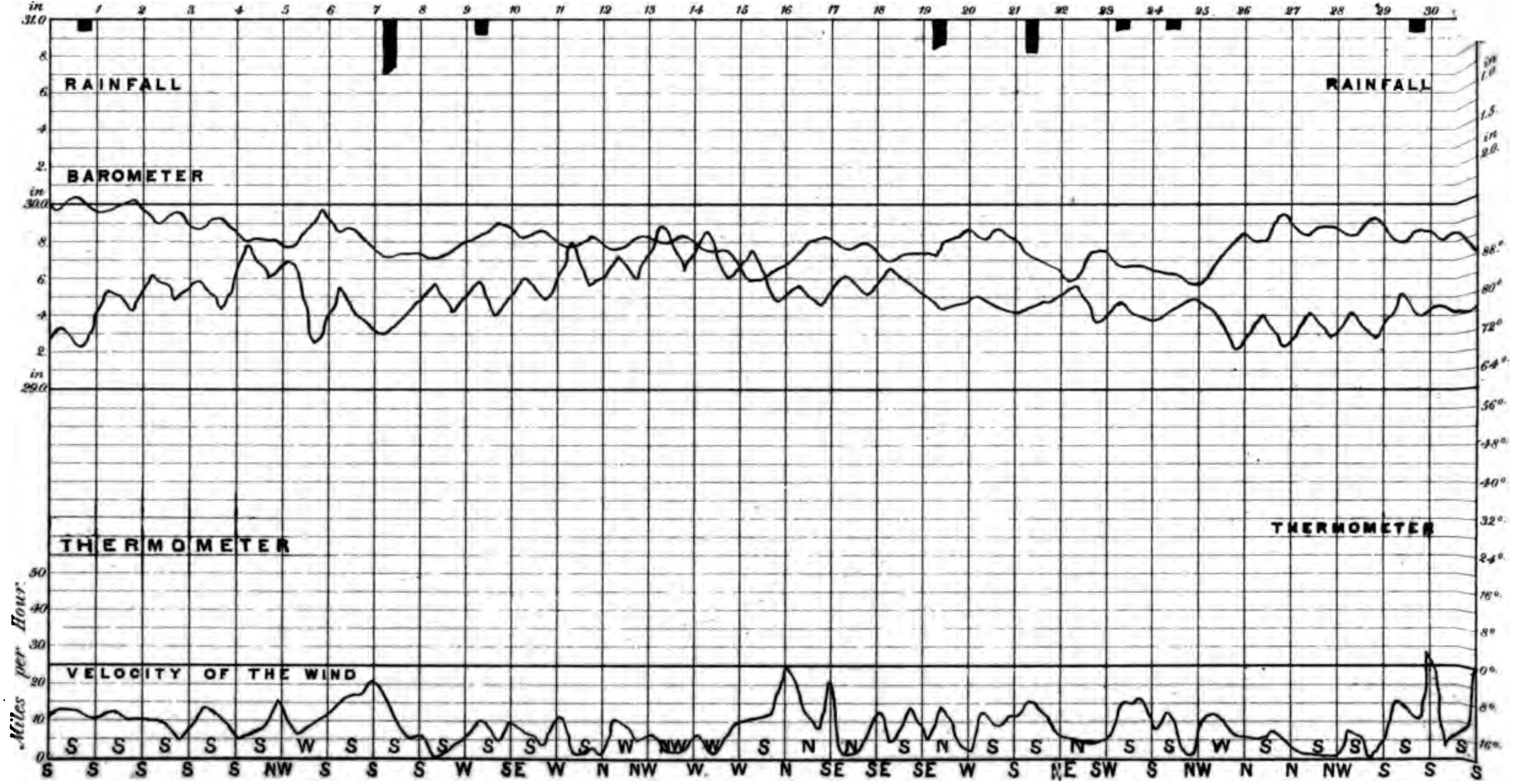

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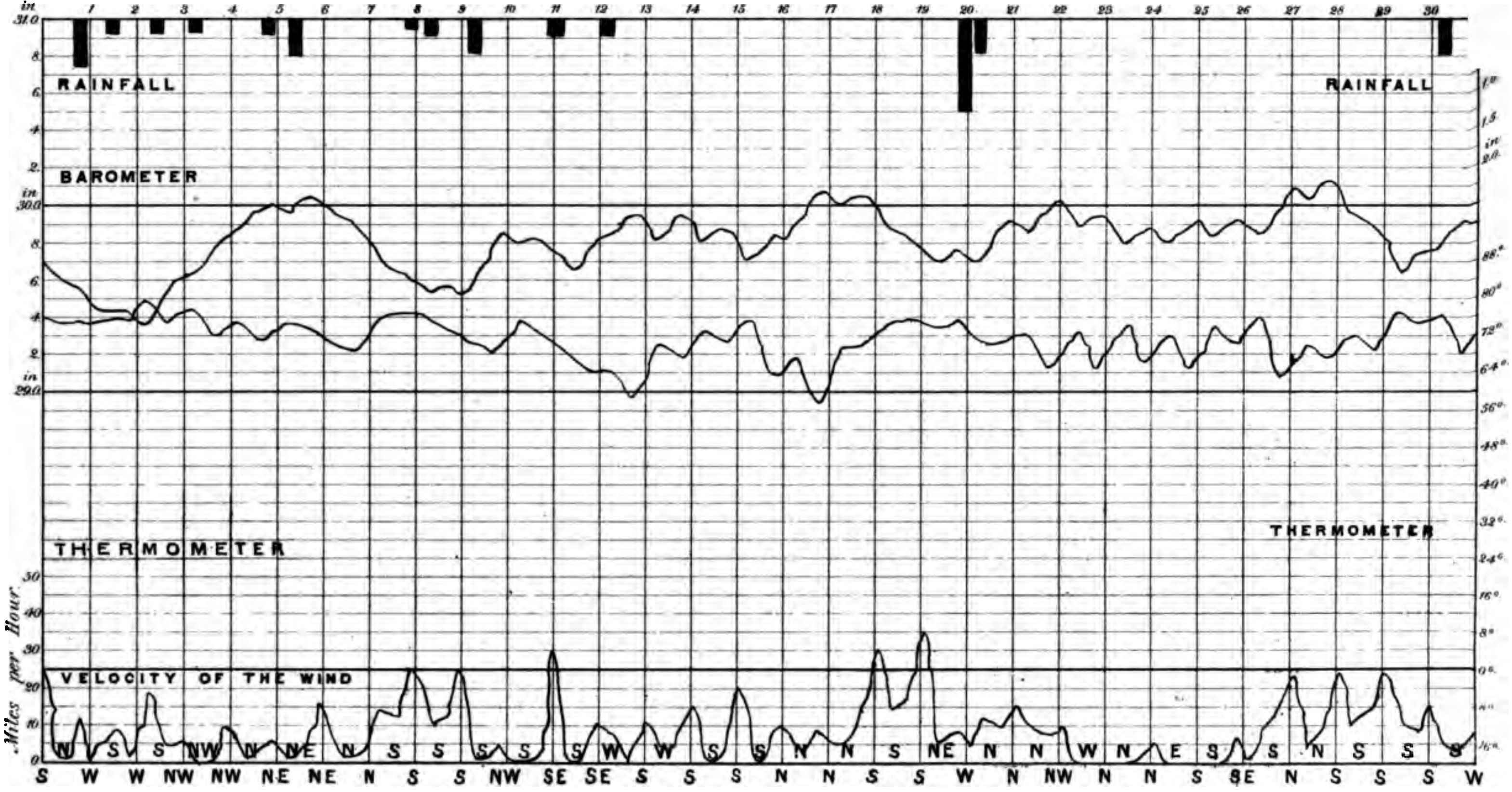

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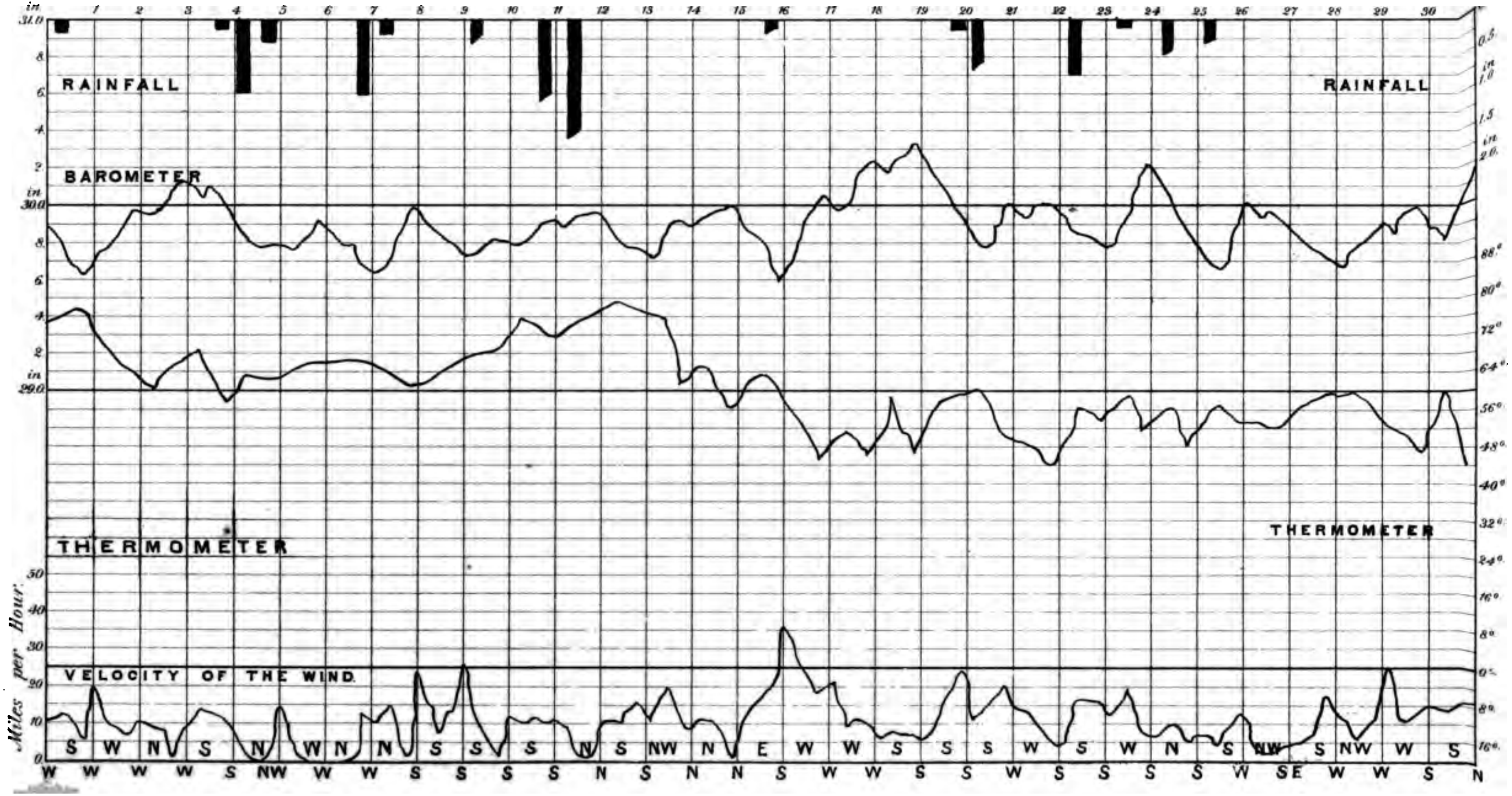

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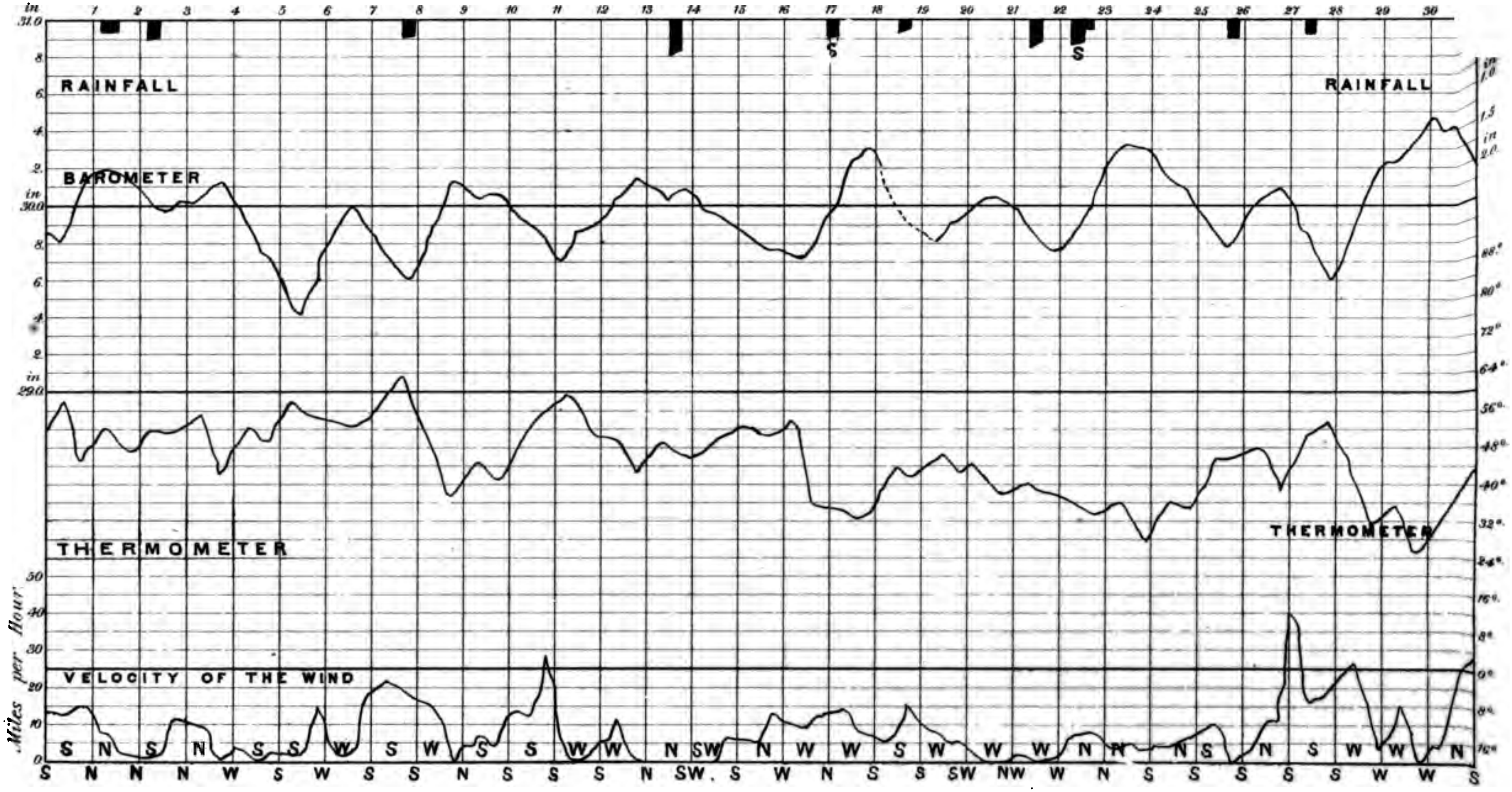

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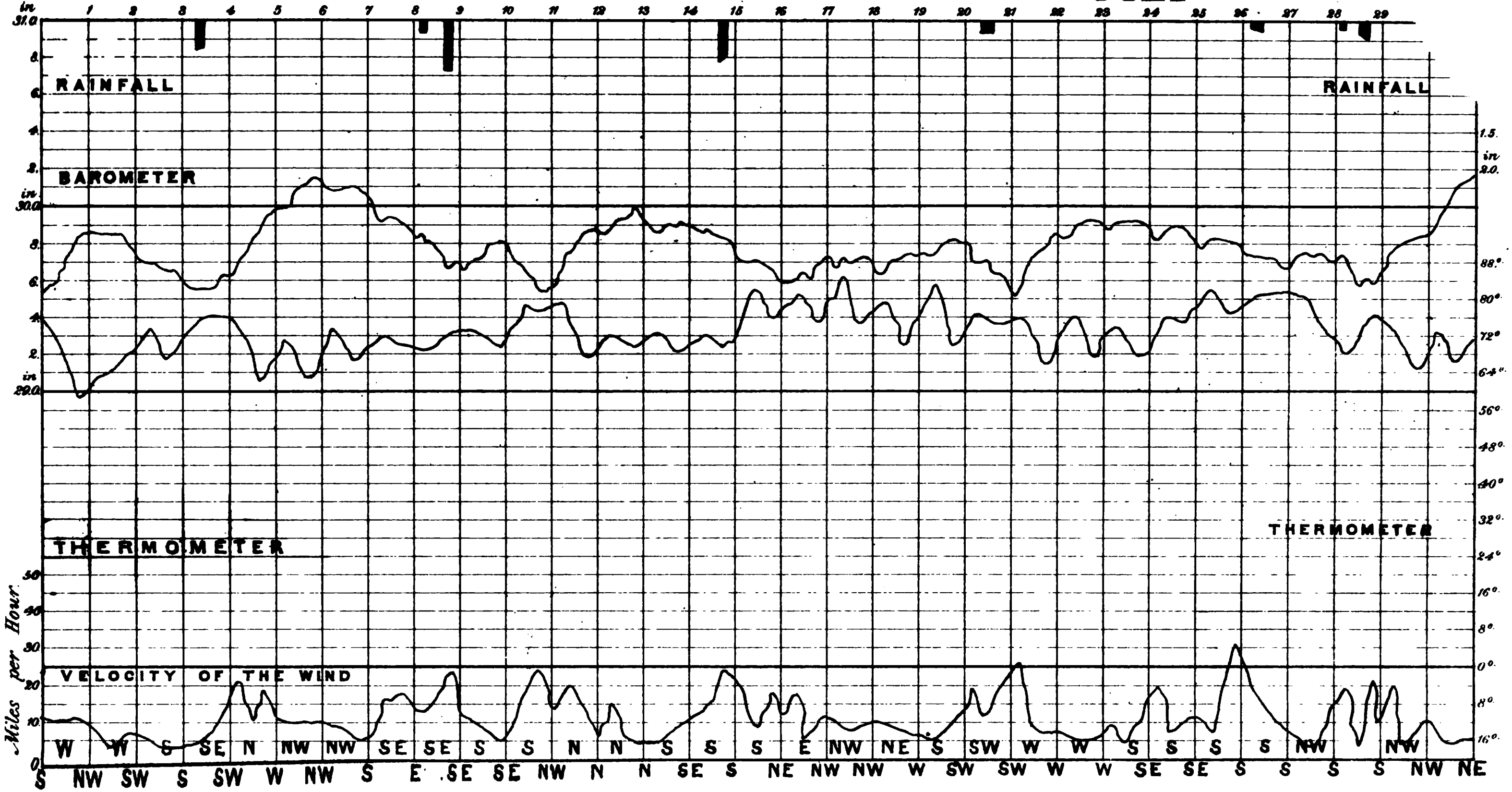

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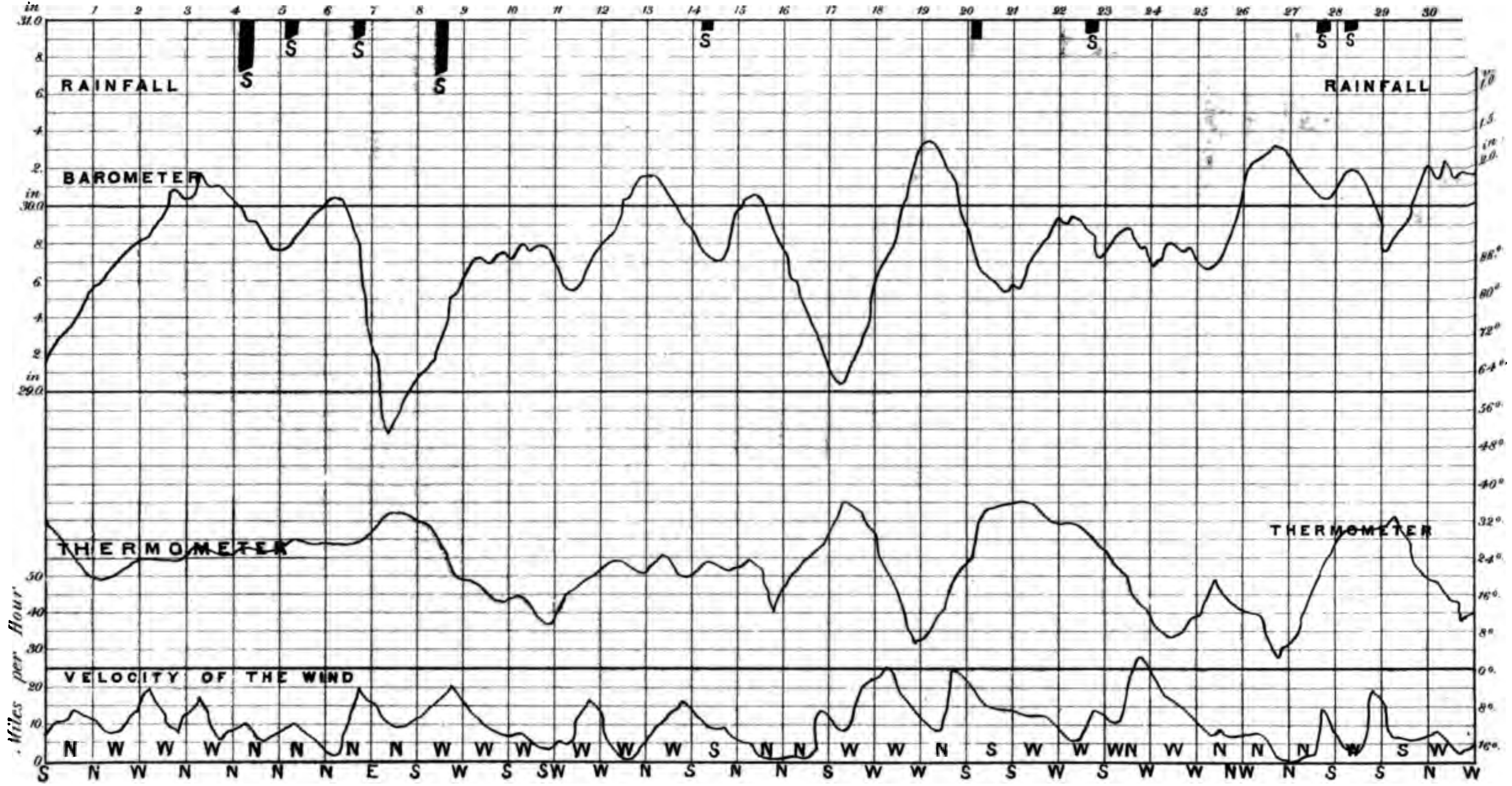

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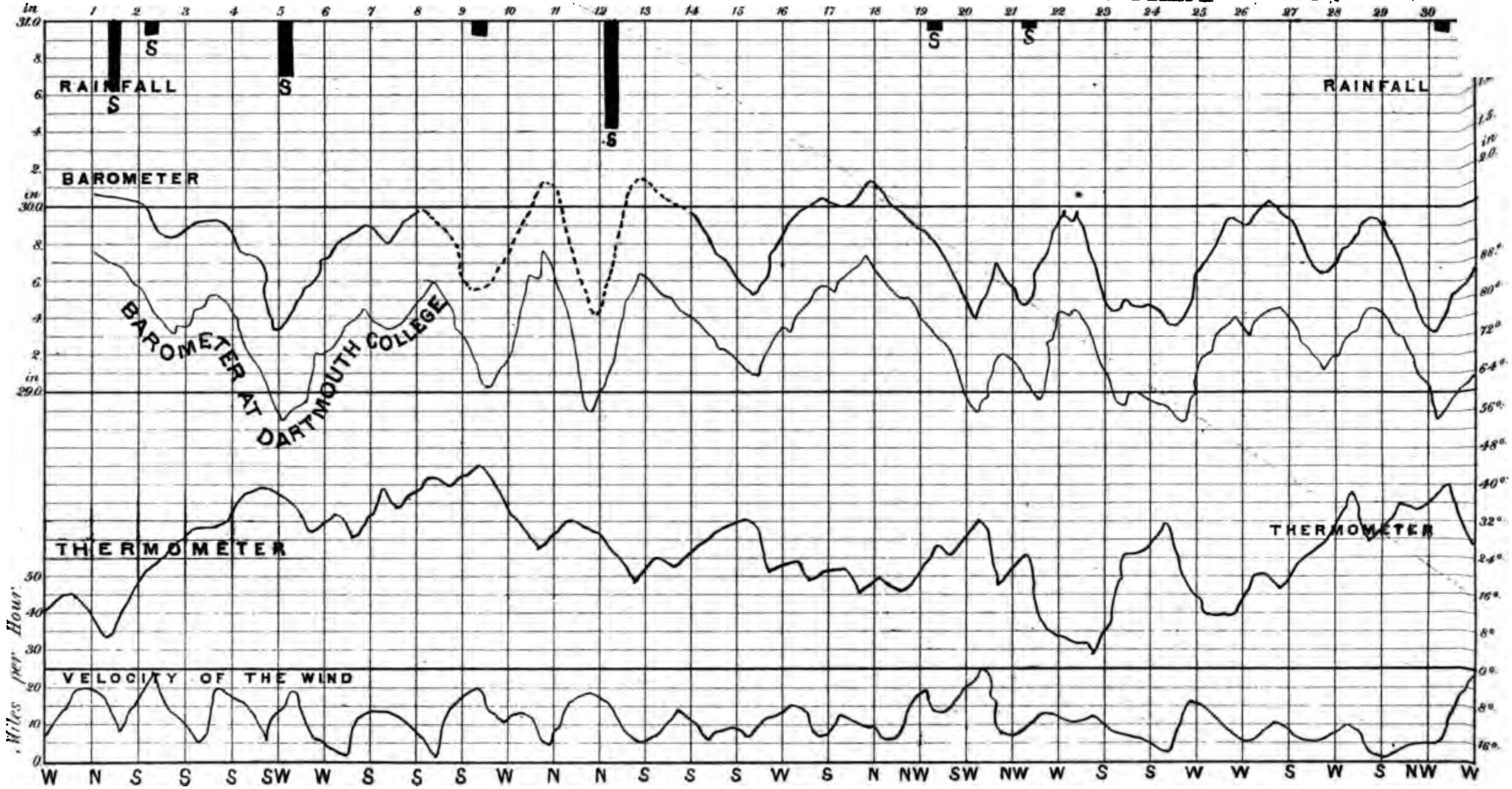

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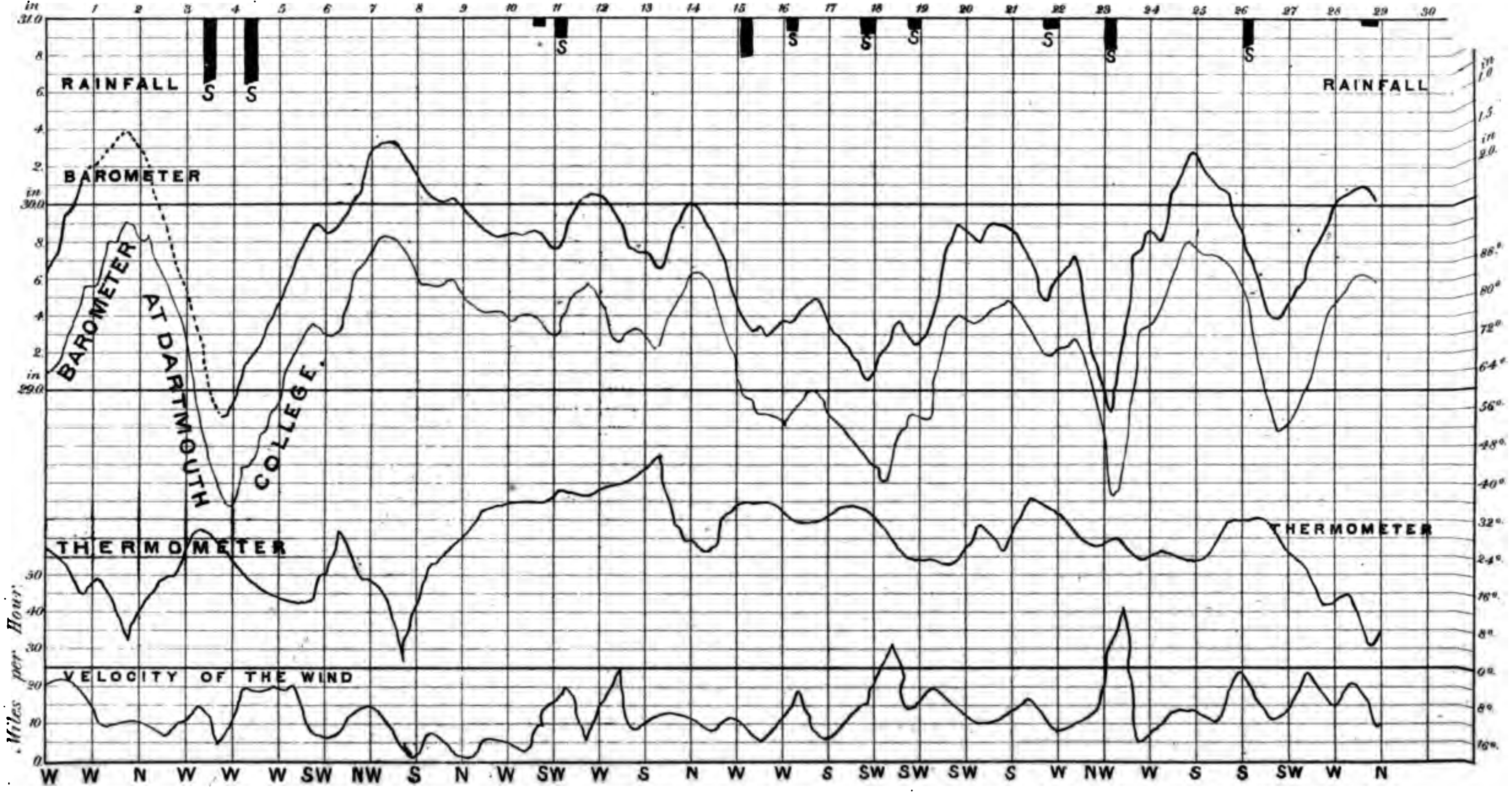

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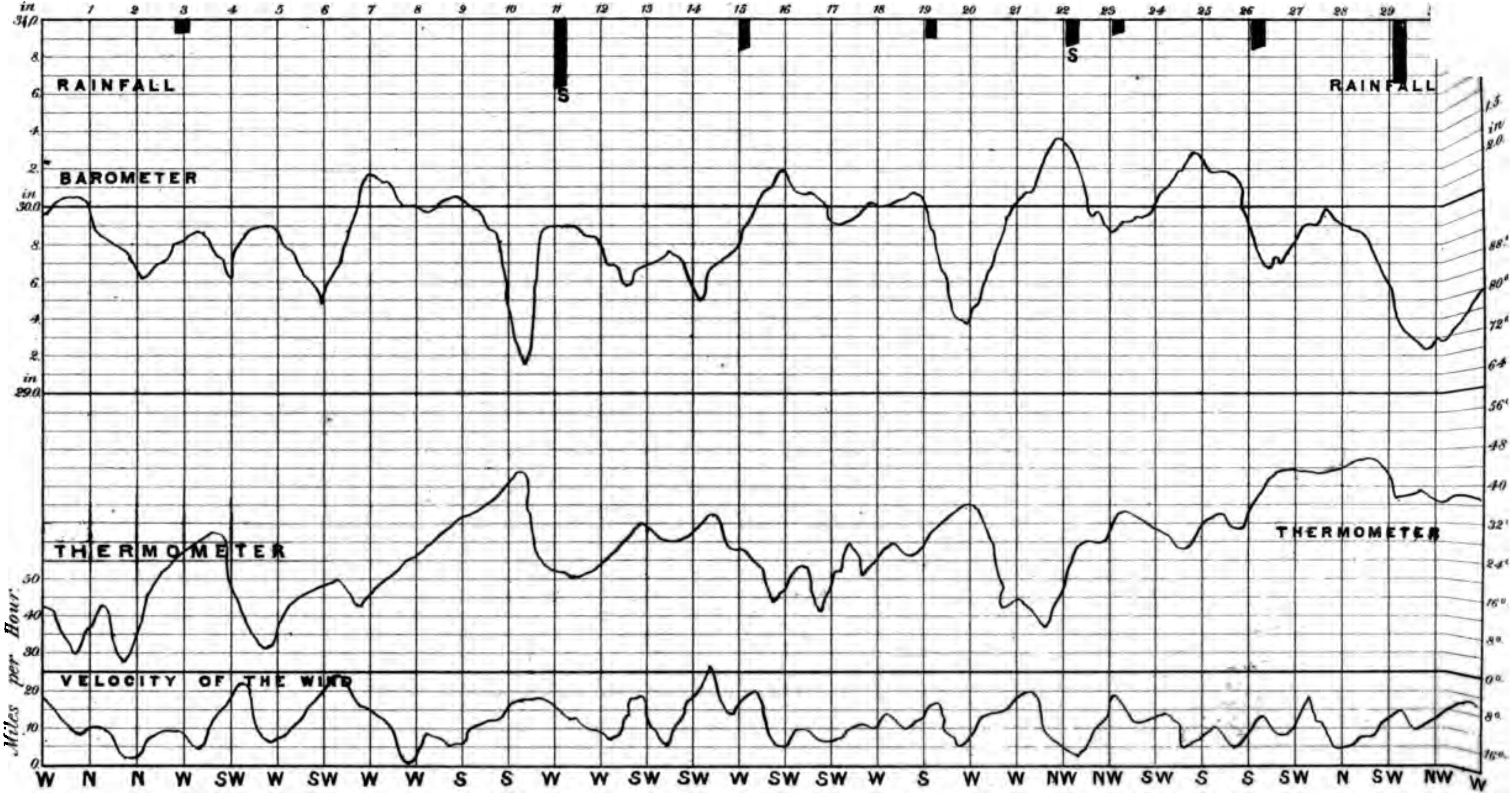

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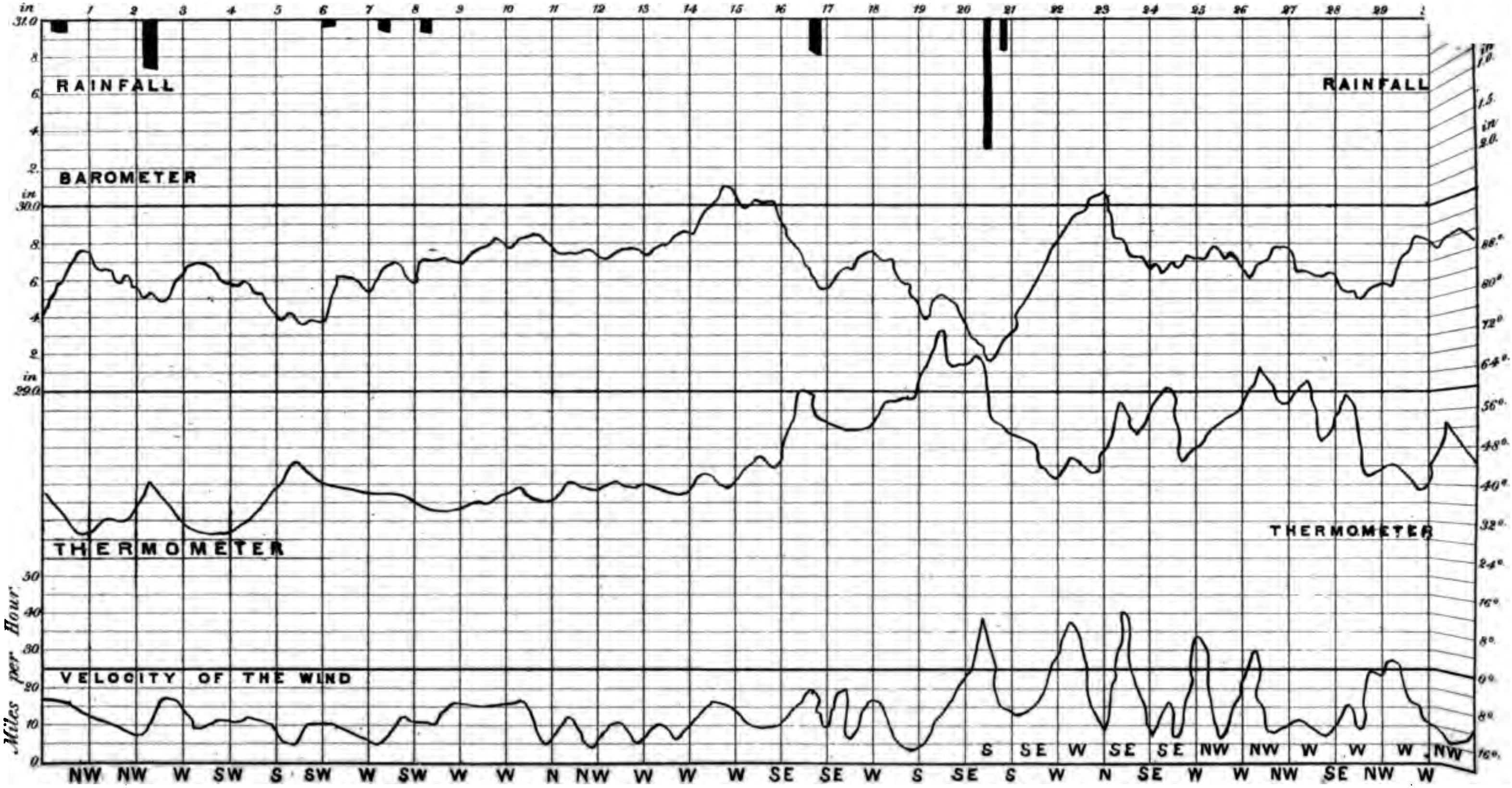

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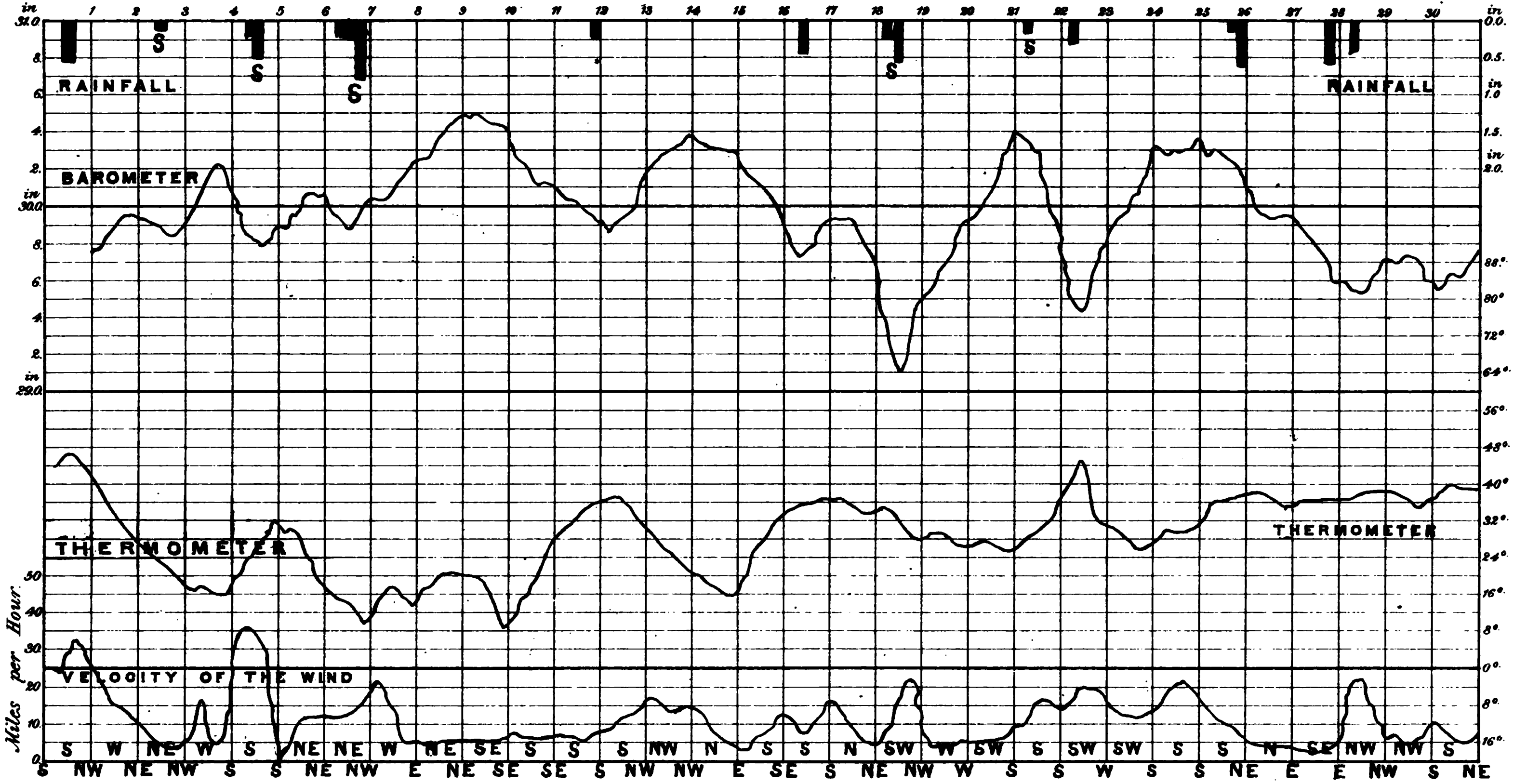

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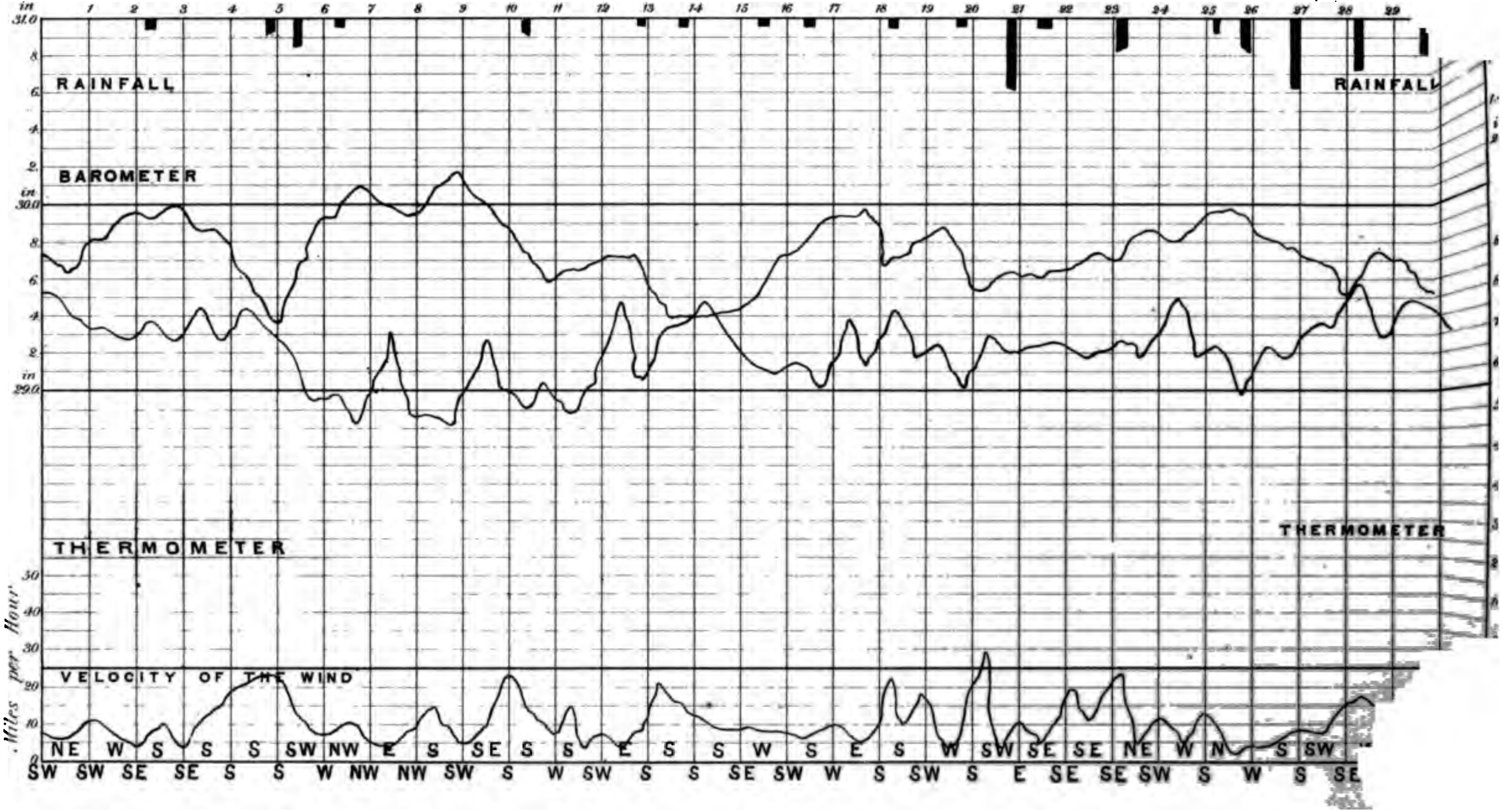

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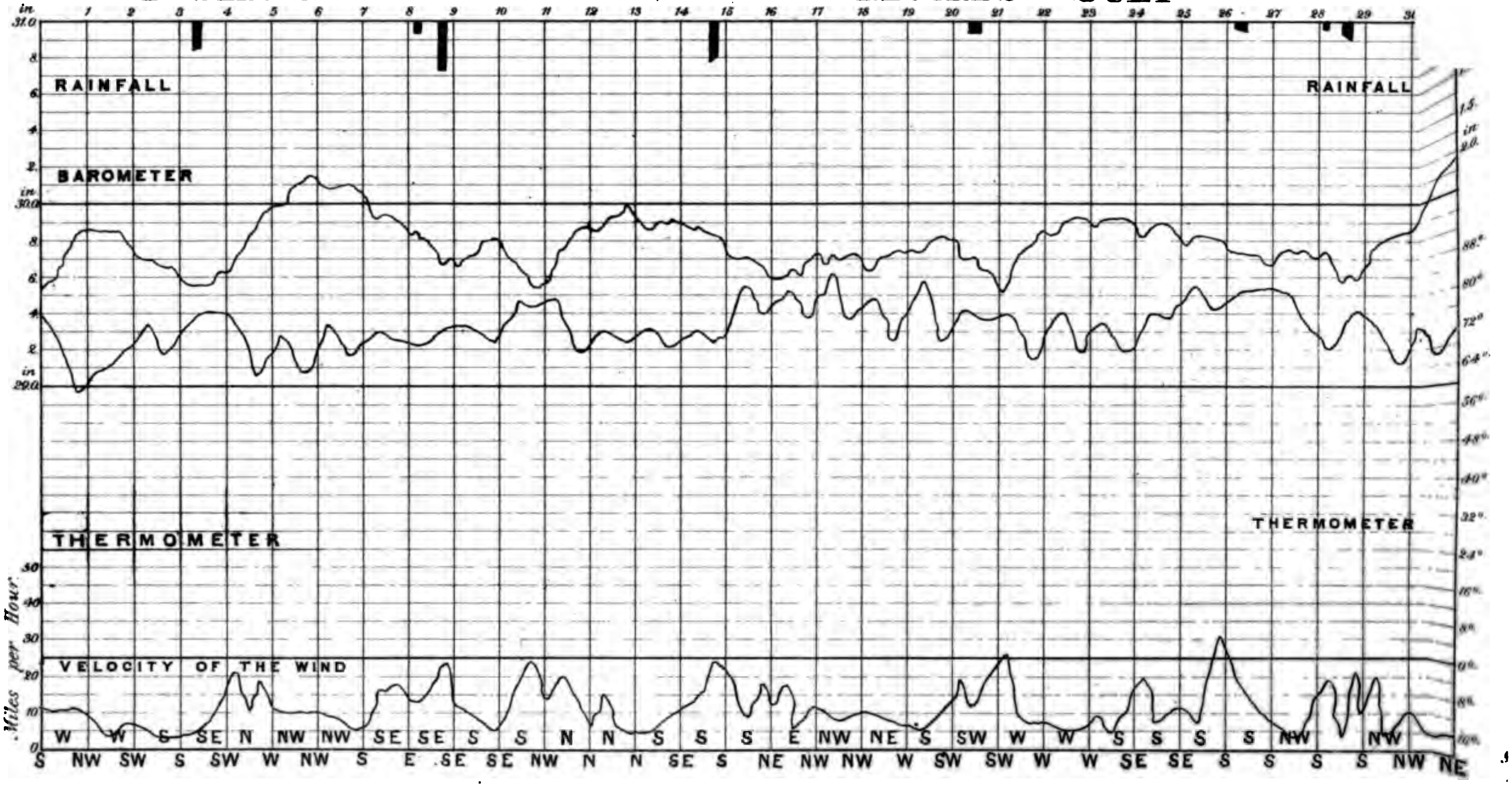

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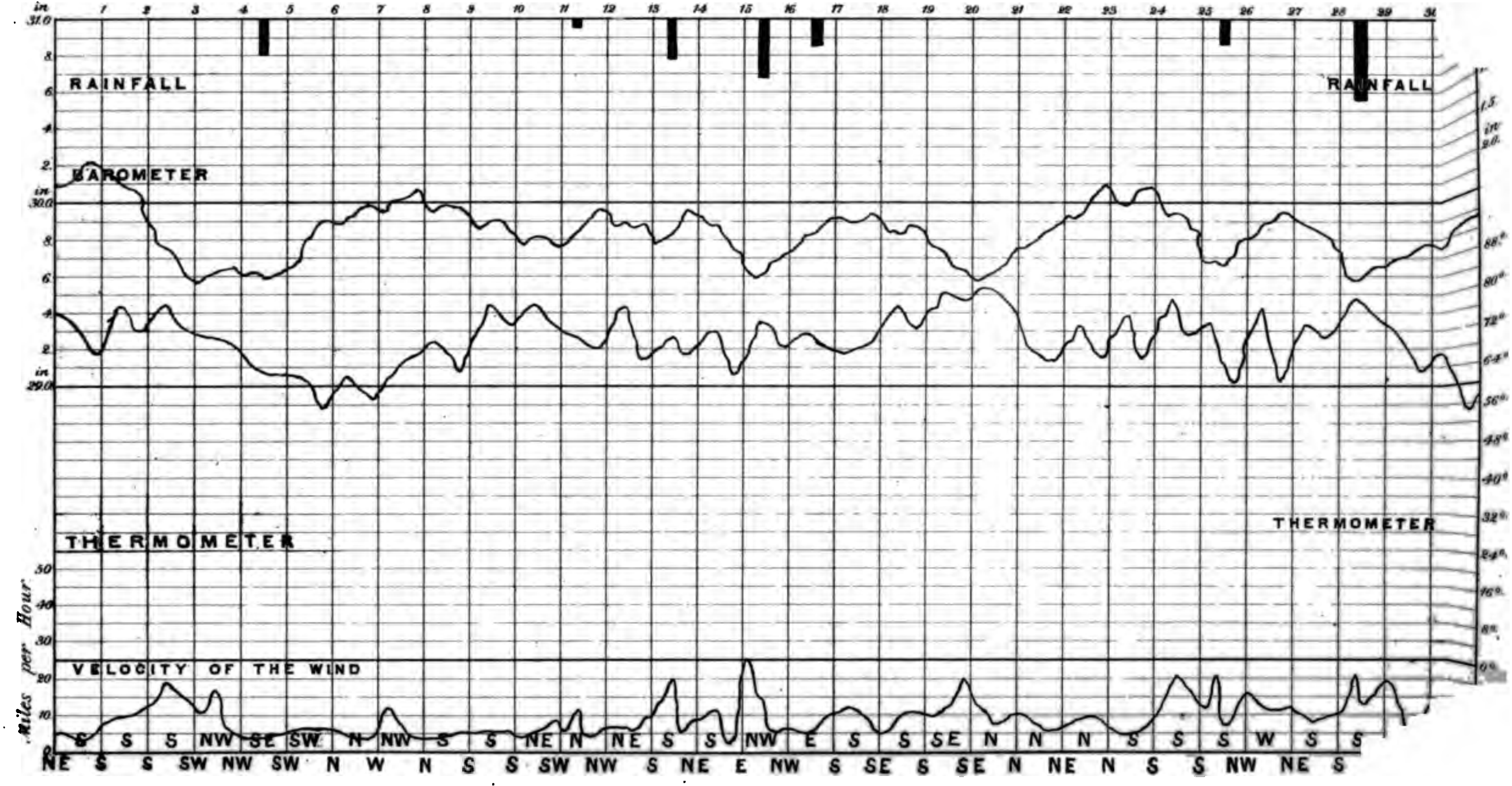

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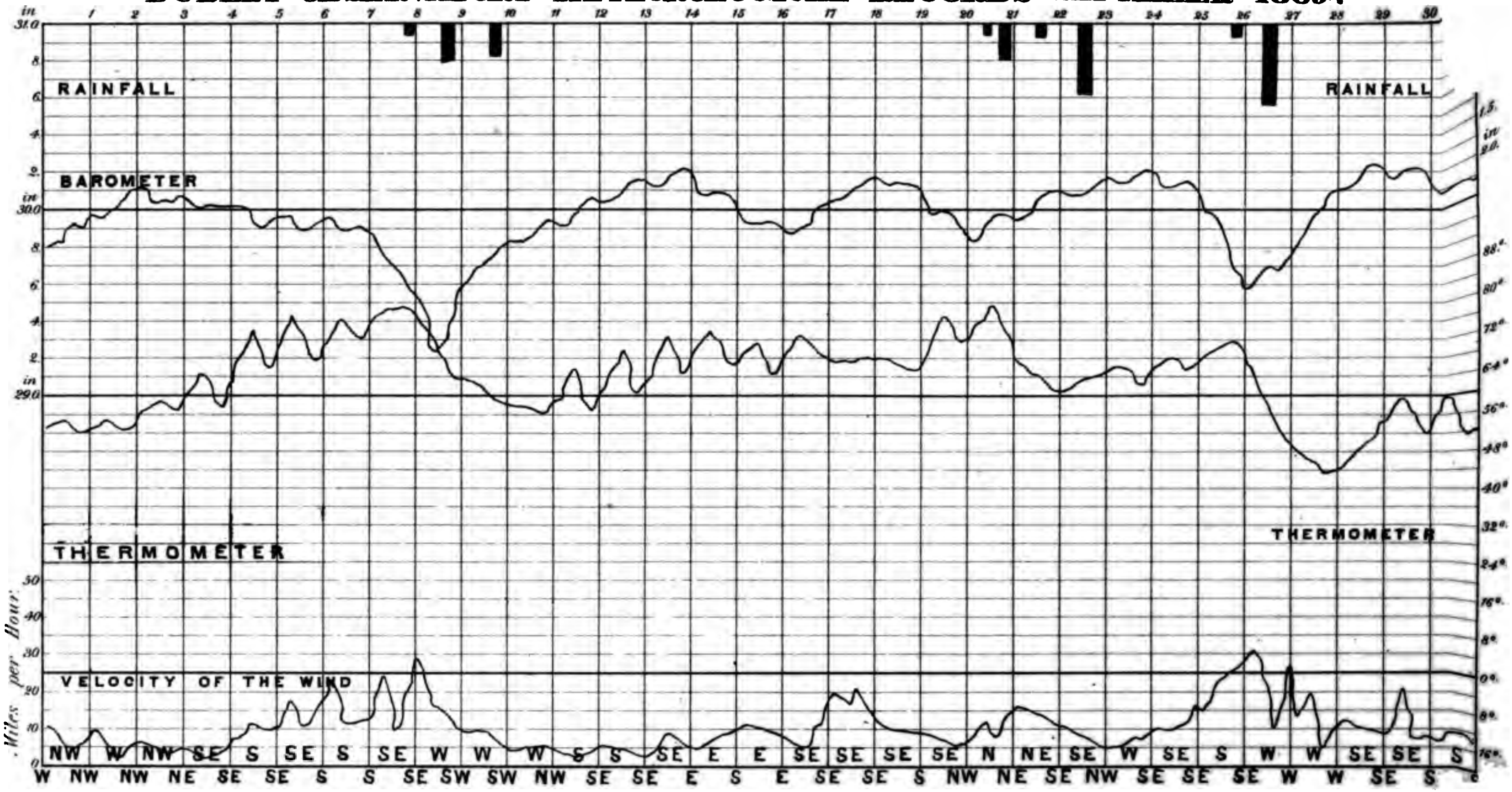

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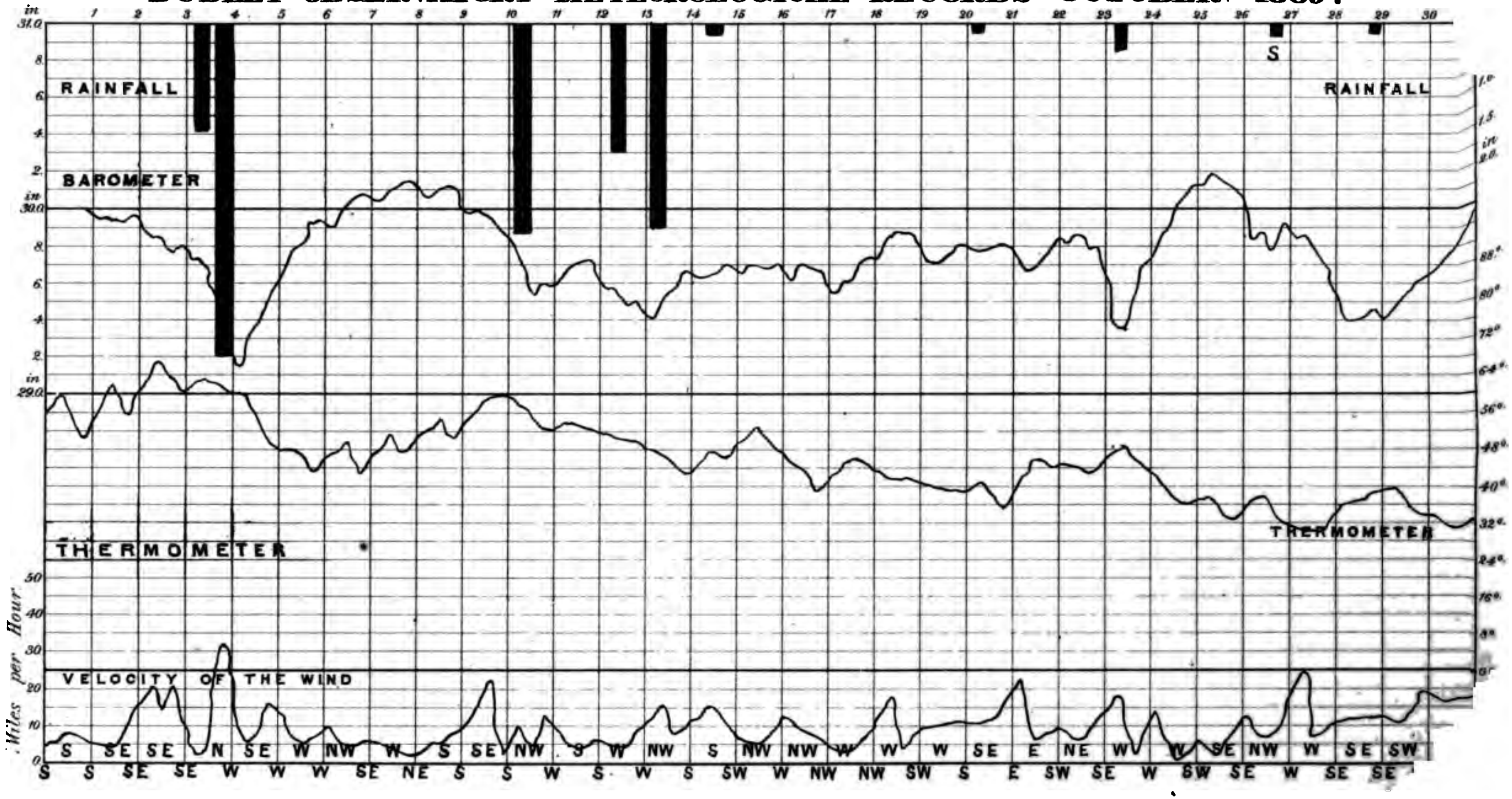

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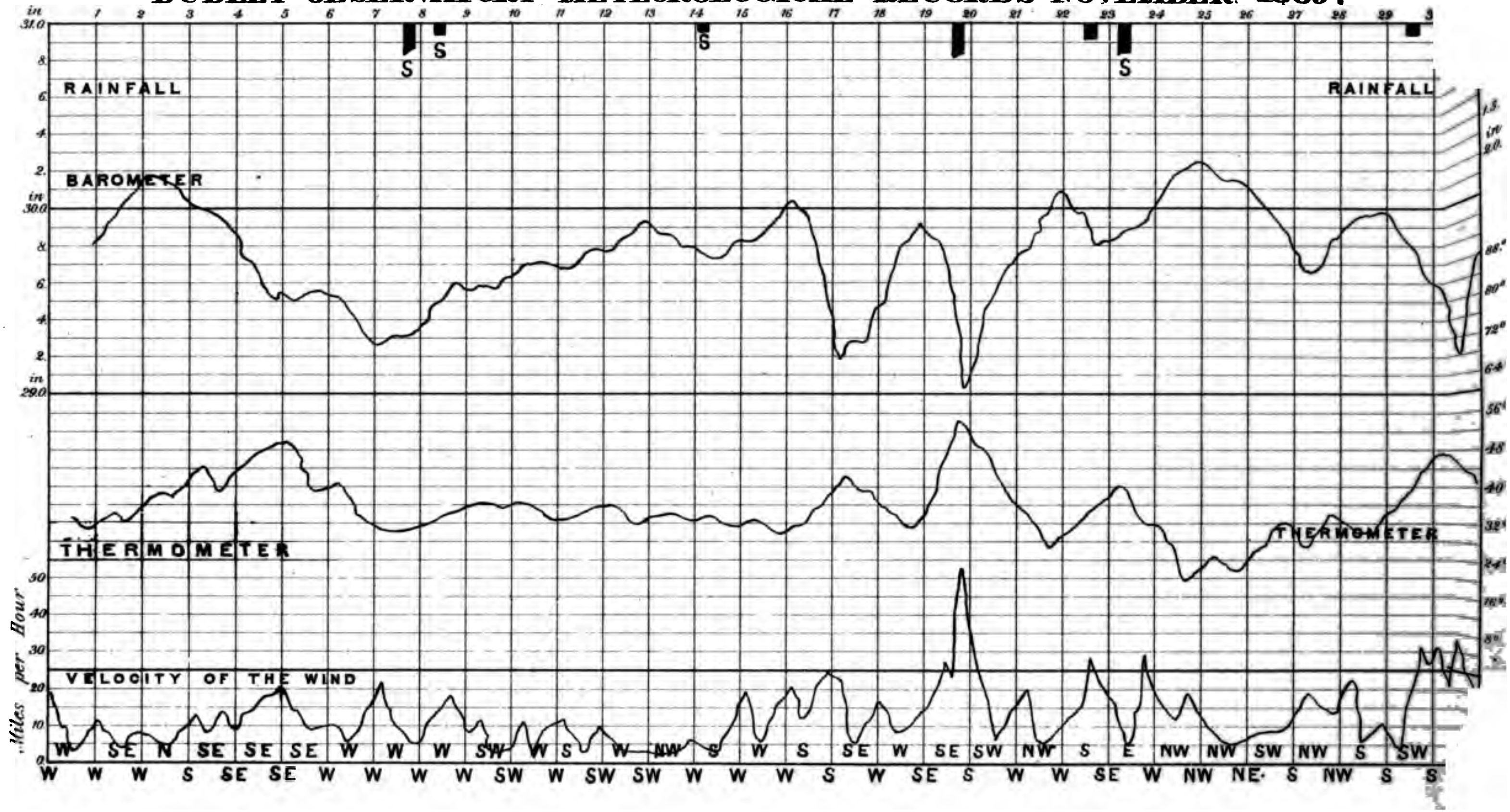

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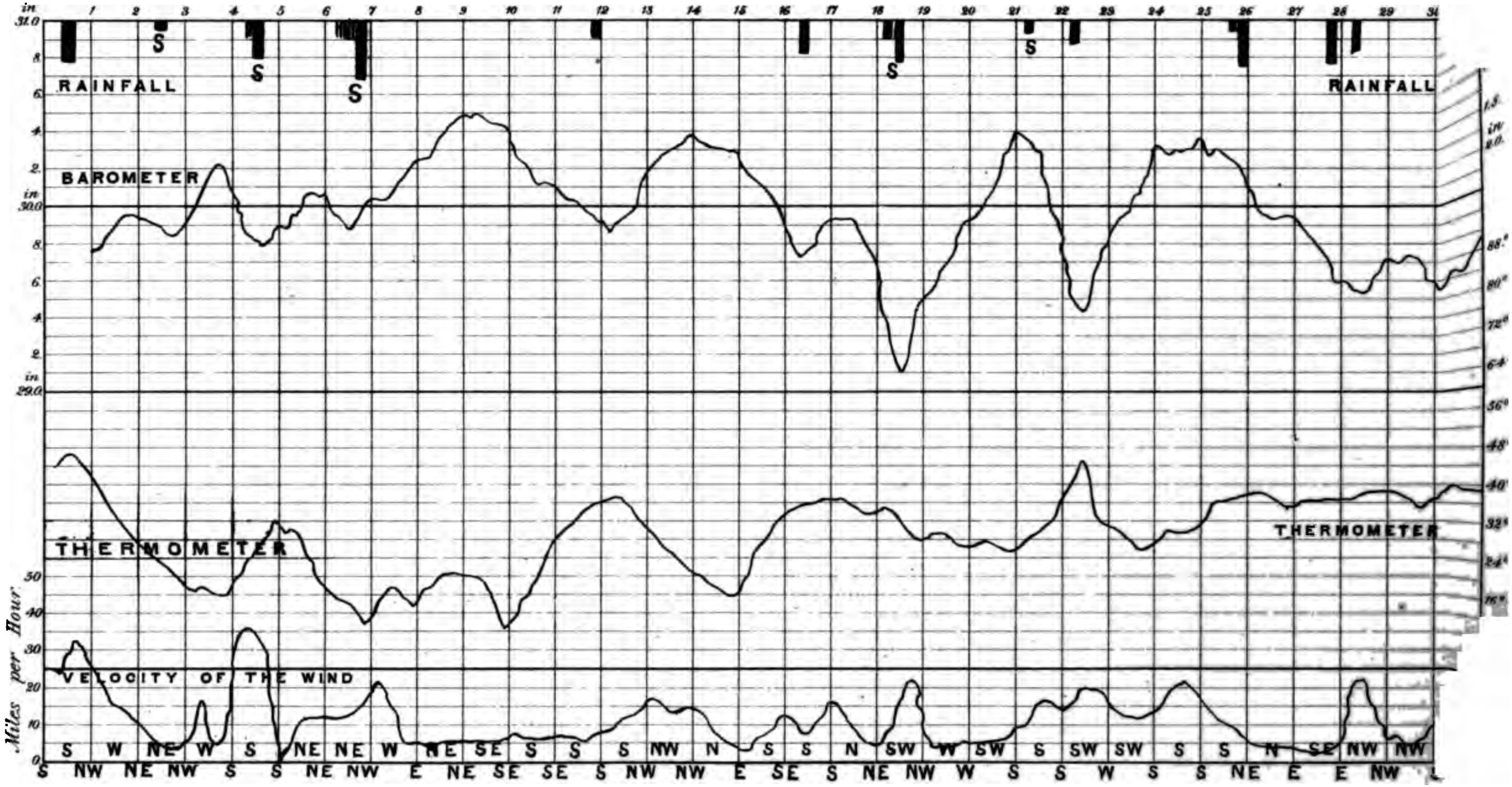

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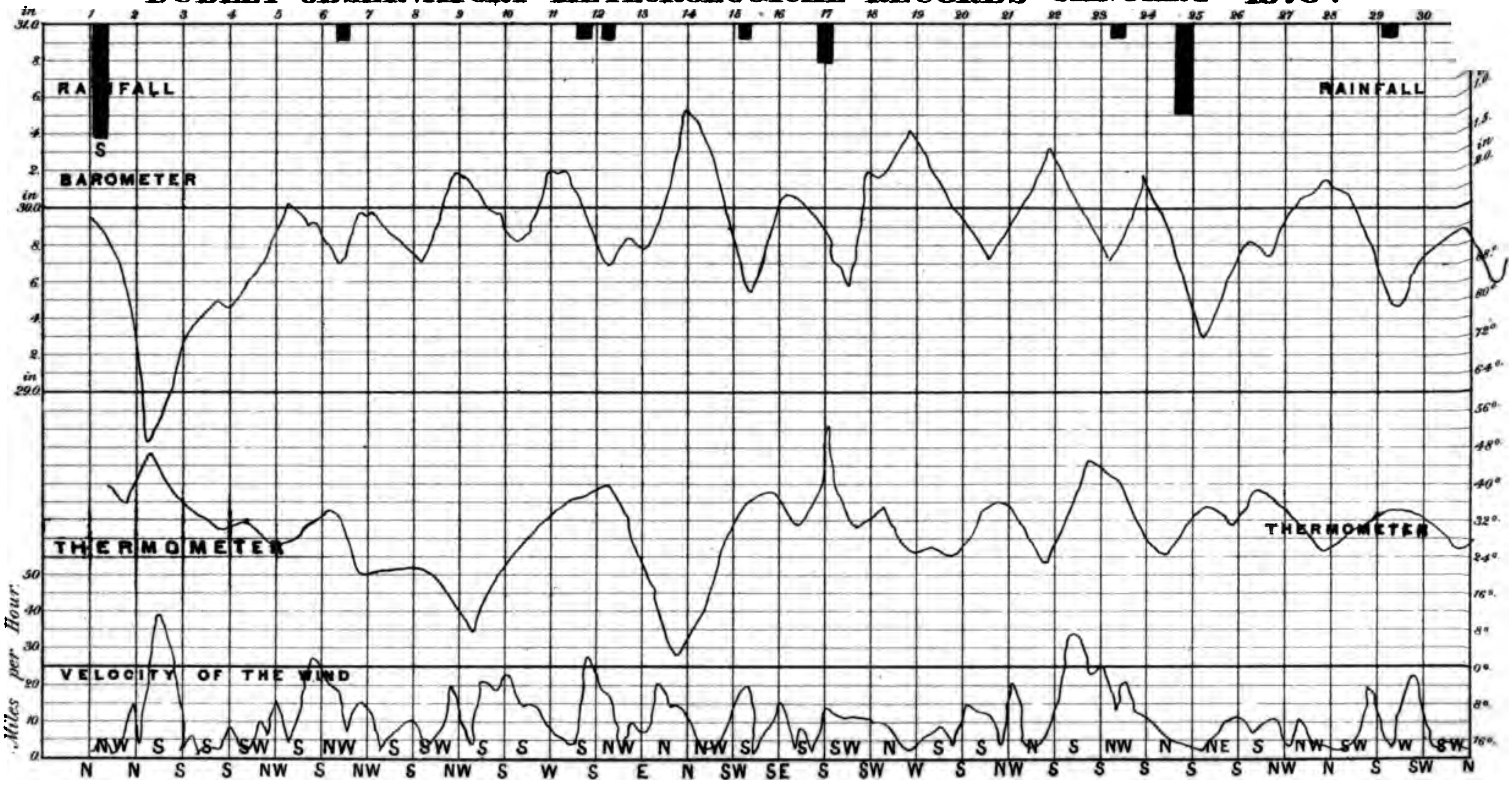

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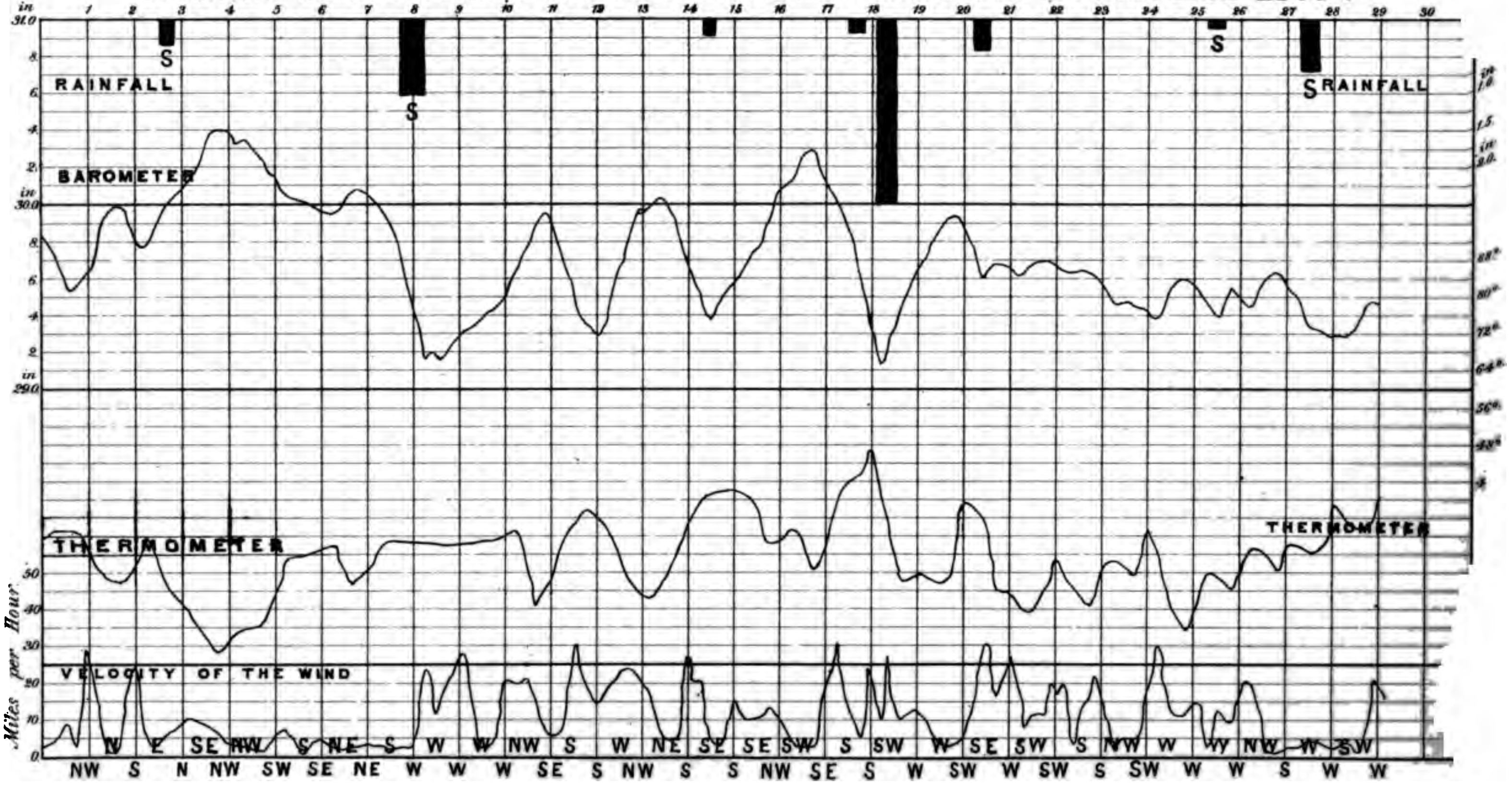

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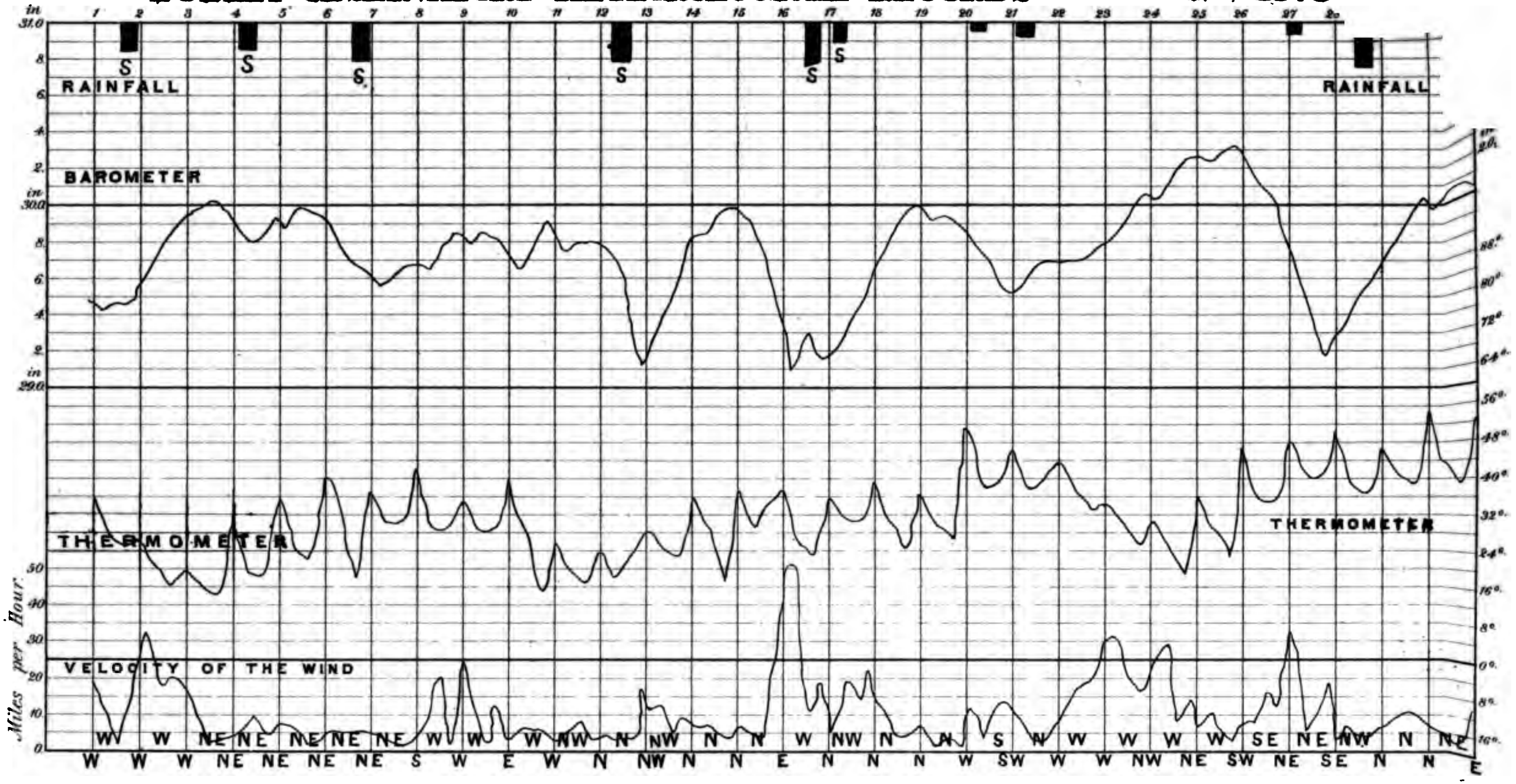

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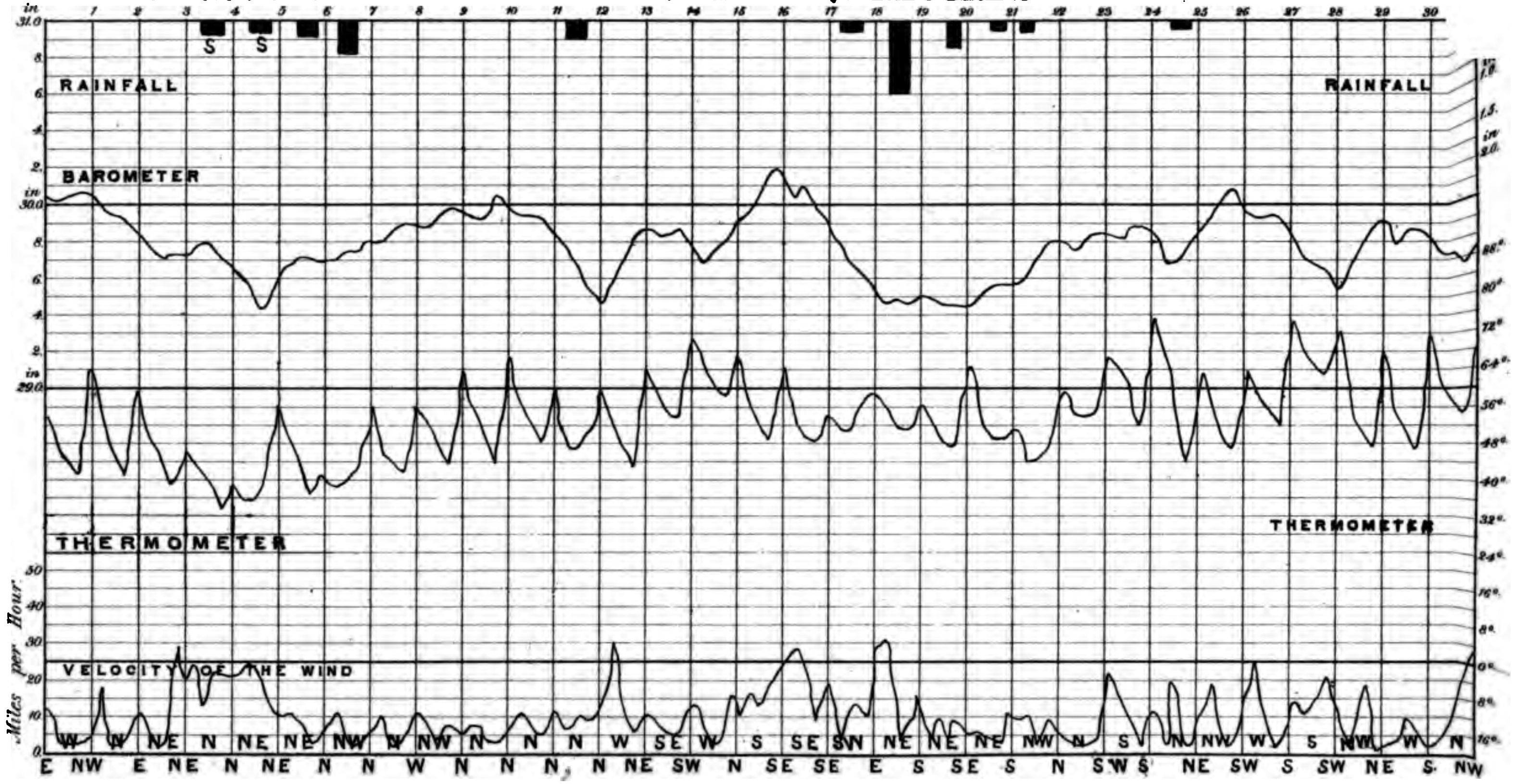

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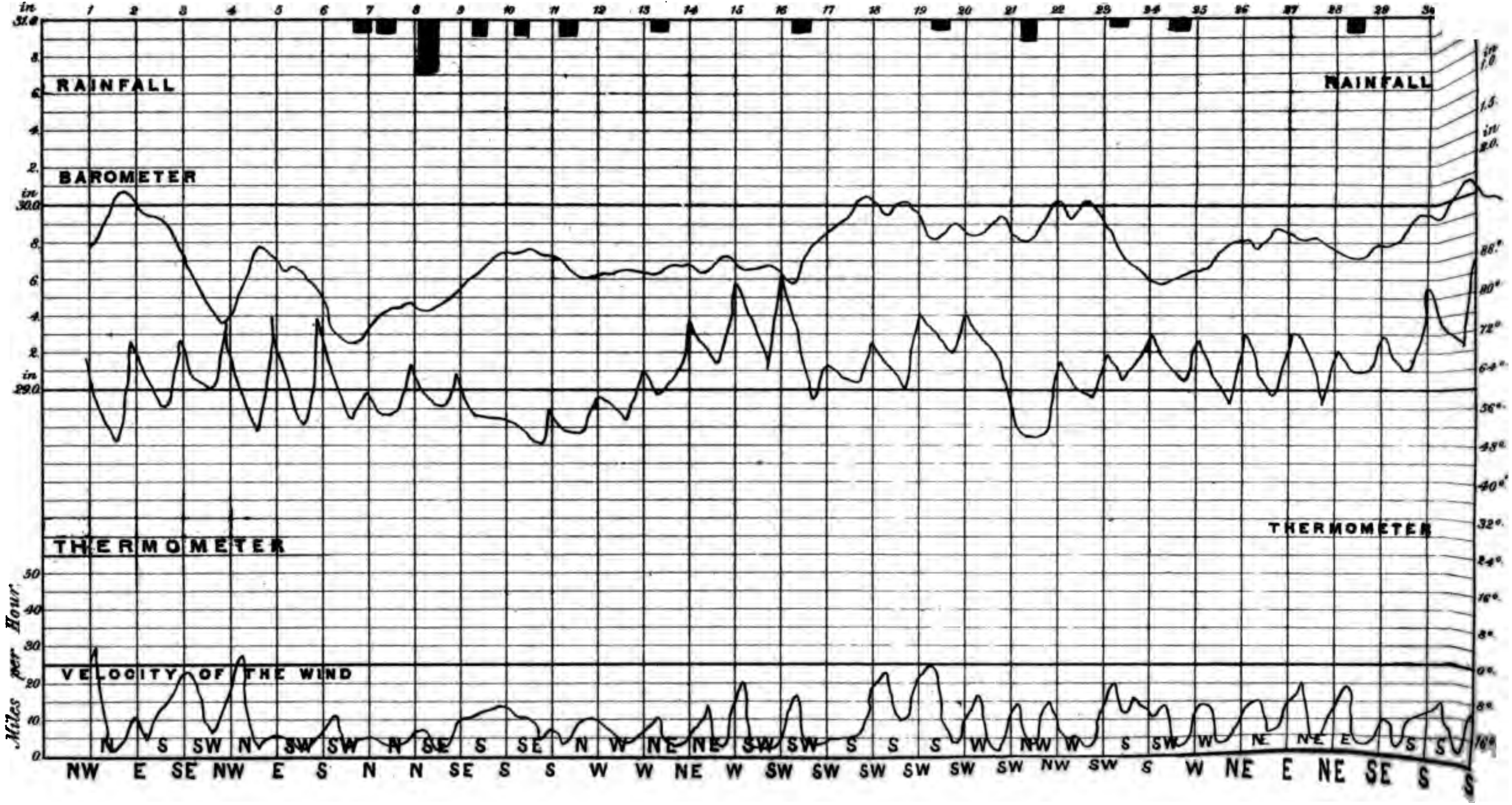

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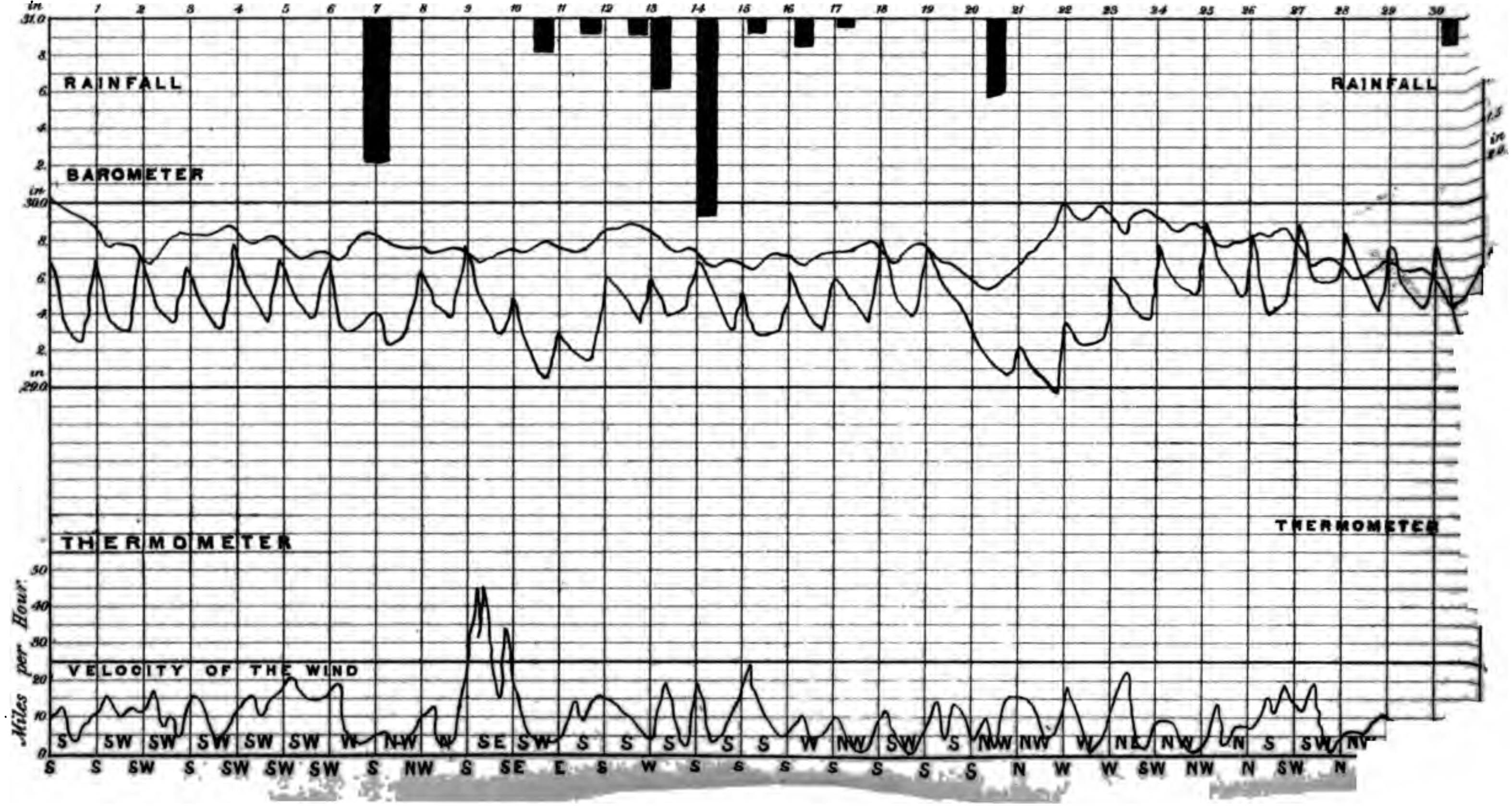

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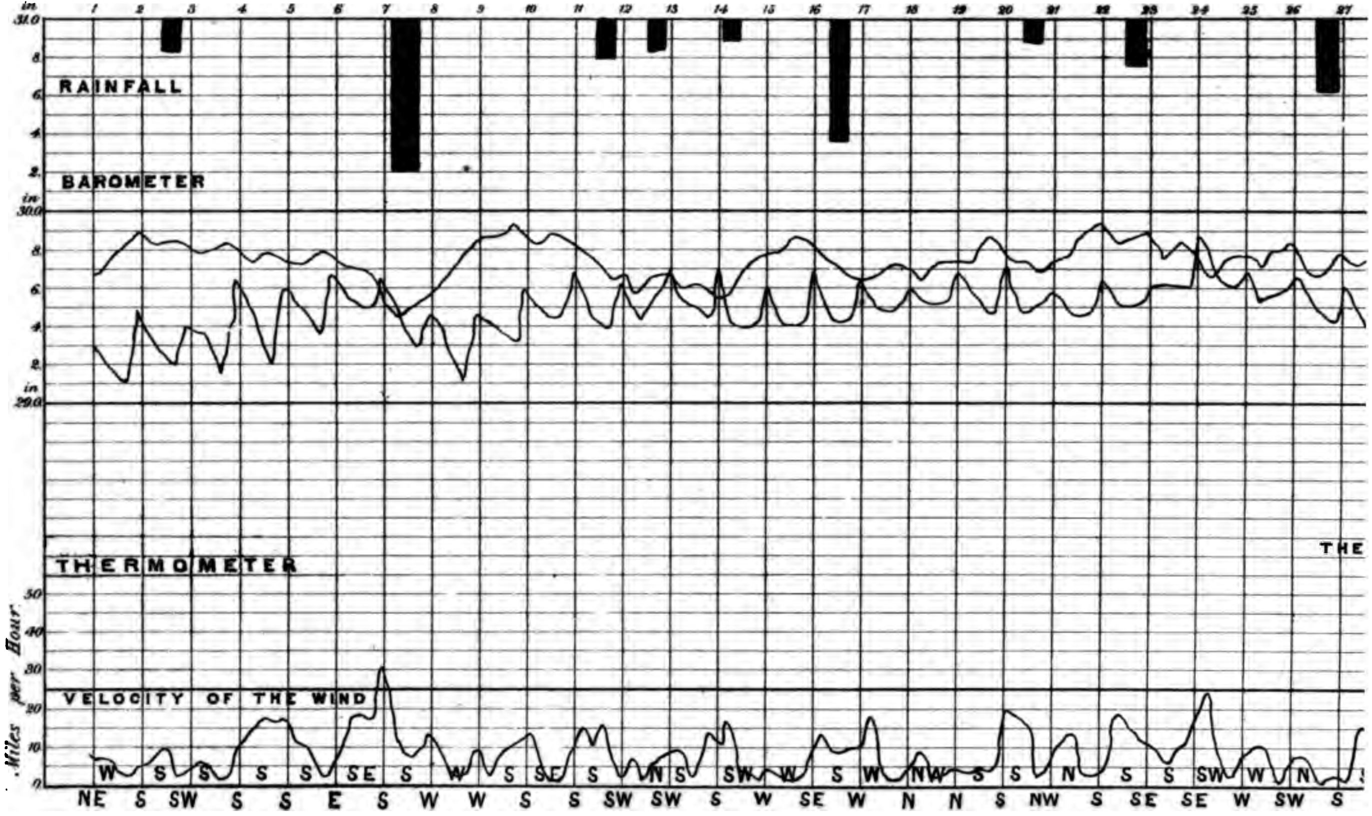

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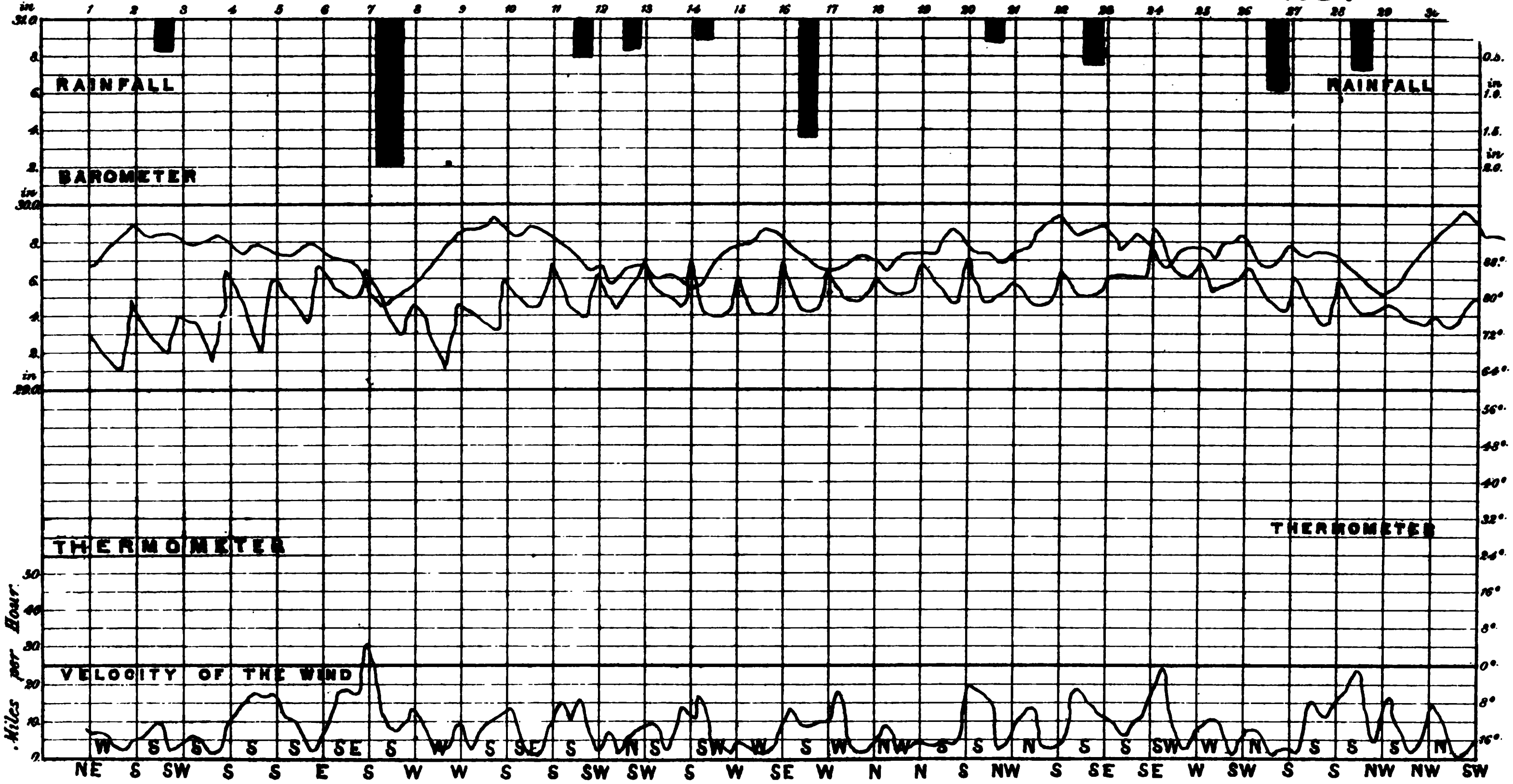

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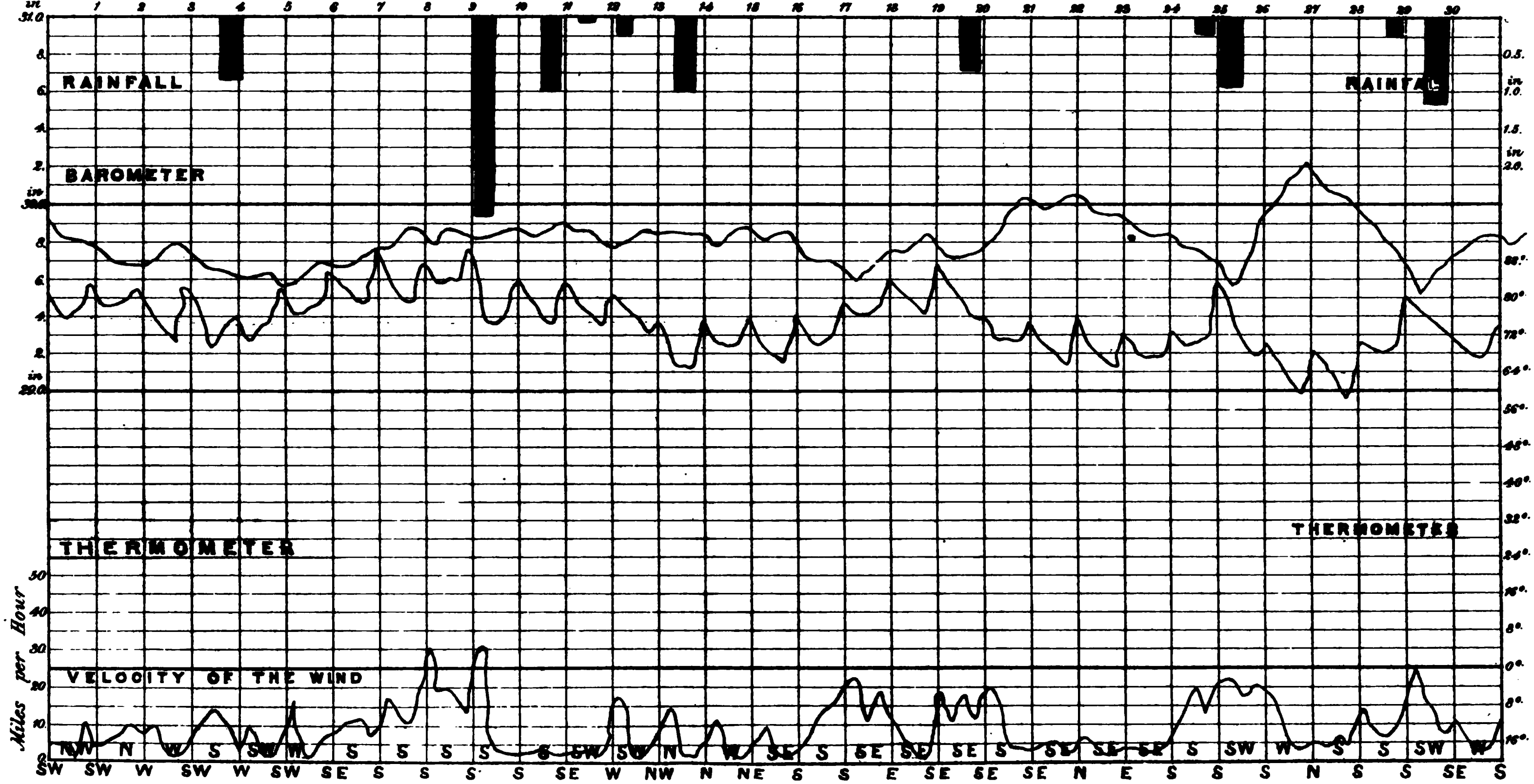

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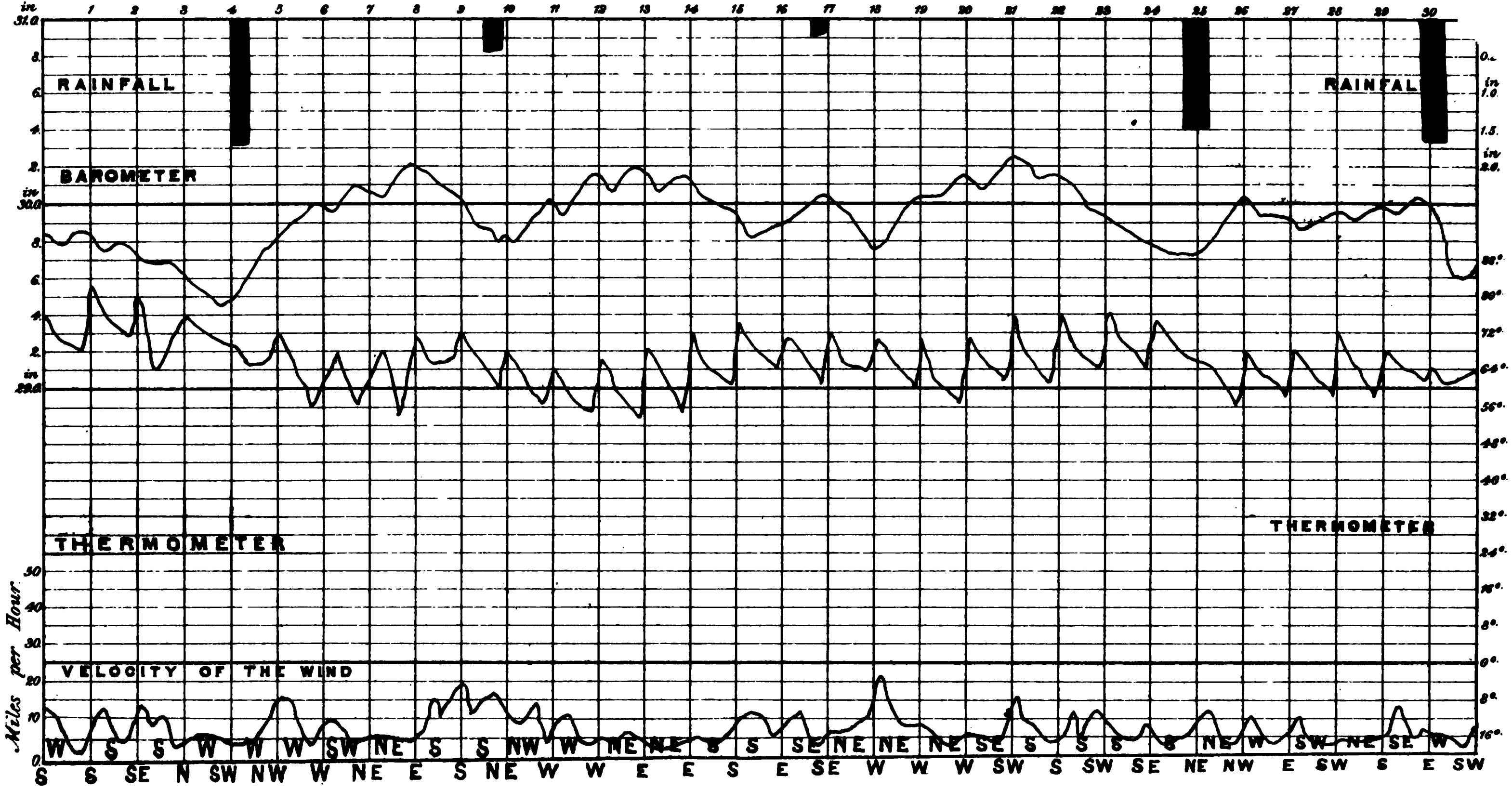

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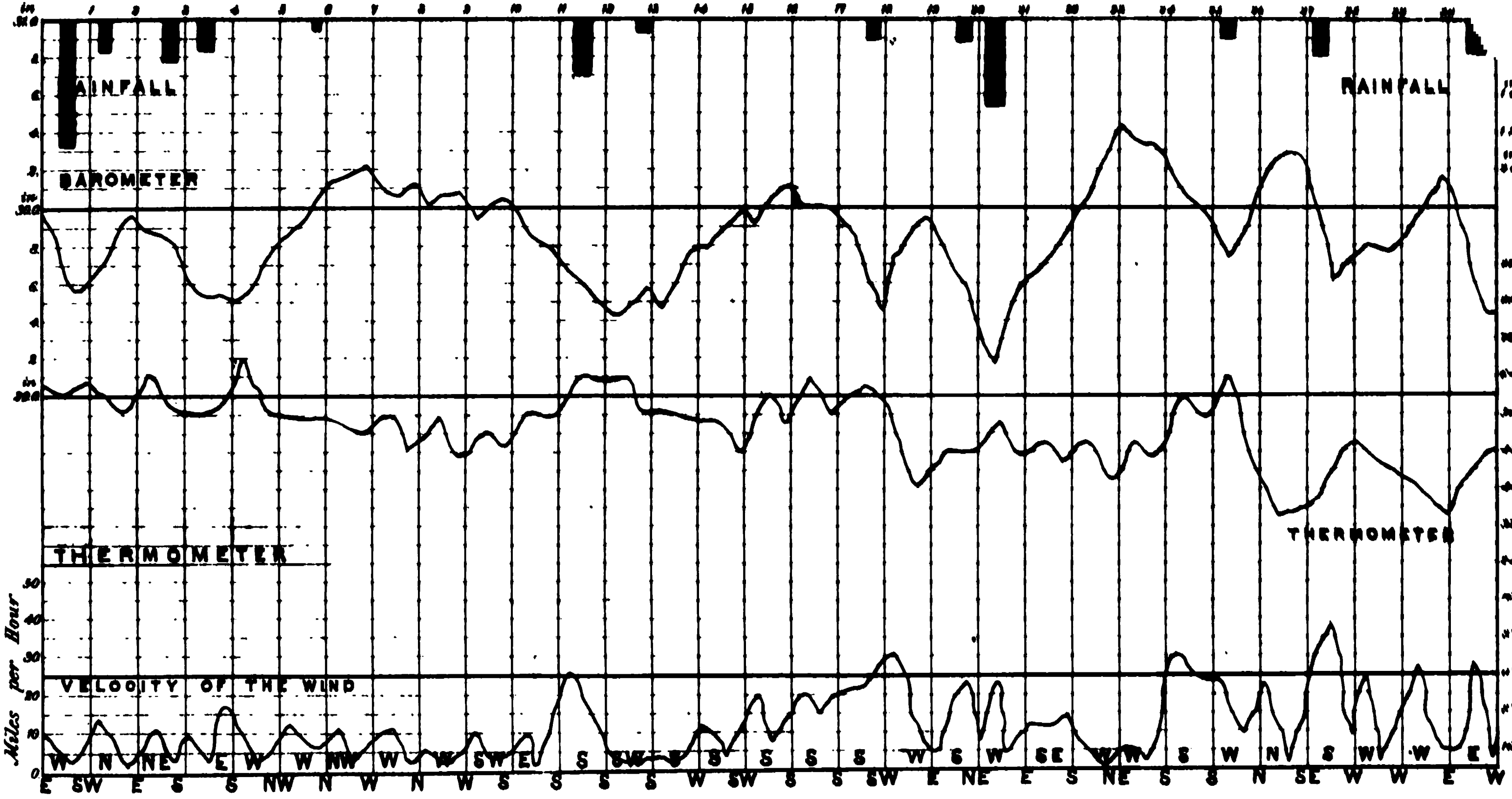

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